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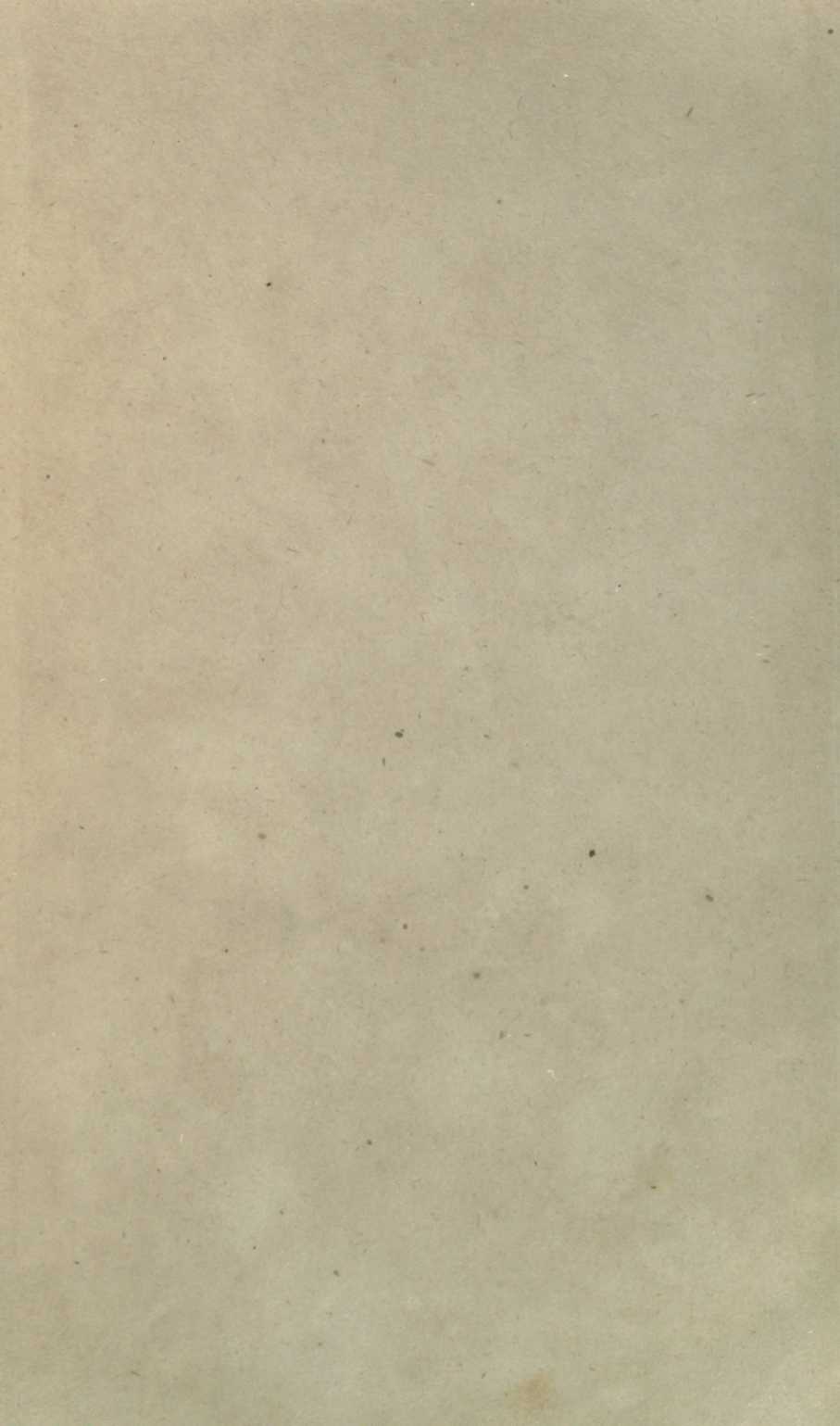
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BEAUTY,
AND THE
LAWS GOVERNING
ITS
DEVELOPMENT,
BY
JOSEPH HANDS, M.R.C.S., &c.



BEAUTY,
AND THE
LAWS
GOVERNING ITS DEVELOPMENT;
WITH SUGGESTIONS ON
EDUCATION,
RELATIVE TO THE ATTAINMENT OF BEAUTY.

BY
JOSEPH HANDS, M.R.C.S., &c., &c.,
Author of "New Views of Matter, Life, and Motion," "Will-Ability and Fascination," "Homæopathy and other Healing Processes contrasted with Allopathy," "A Dissertation on Diets and Digestion," &c ; &c.

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TO
WOMAN,
THE MOST BEAUTIFUL OF NATURE'S
ATTRACTIVE CREATIONS, THIS
BOOK IS DEDICATED.

APHORISMS.

- (1.) Nature—in preference to imitative Art.
- (2.) The outline of Beauty is accomplished by serpentine curves.—*Hogarth*.
- (3.) In life, as in Art, the beautiful can only be unfolded through curvilinear delineations.—*Bulwer*.
- (4.) Form, proportion, fitness, congruity, and quality, with modifying and appropriate colouring, including position, with easy and graceful movements, are the chief attributes of Beauty.
- (5.) The first intent of Nature is that all her primeval creations should produce faultless forms, especially in outline and adaptation.
- (6.) Art of the highest order is at last only a *copy* of Nature.
- (7.) Seek after the things that are correct, and those productions which promote pleasure in others, these pursuits being always beautiful, because they lead to true happiness, out of which grows perfection, whether of thought or deed.

LITERARY NOTICES ON "NEW VIEWS
OF MATTER, &c.

We have been favoured with a perusal of a portion of Mr. Hands' Work on "MATTER, &c.," and can speak of it as a most able and interesting contribution to scientific literature.—*The Modern Physician*.—May, 1879.

Mr. Hands' Essays on Matter, Motion, Life, and Resistance, &c., are replete with instruction and original conceptions of a very striking character.—*Human Nature*.—June 20th, 1879.

Mr. Hands, of Hammersmith, author of some very interesting works, has now adopted the plan originated by Dickens and Thackeray, whose books were brought out in monthly instalments. Mr. Hands' views are most original, and illustrated by facts; his language stimulates the mental taste, like that of Robert Burton and Dr. Johnson, and pleases whilst instructing the reader.—*The Sussex Daily News*.—June 18th, 1879.

Mr. Hands has issued the second (July) part of his "New Views of Matter, Life, Motion, and Resistance." In many respects, this thoughtful and industrious author has trodden paths which are also explored by Dr Babbitt, in his great work on "Light."

These writers are pioneers in new fields of scientific research, and, as such, a duty falls to their lot which cannot be attributed to a selfish motive. Mr. Hands is a true author, and gives to his readers profound original thought, at a popular price, his single object apparently being the education of the public mind in all its multitudinous forms.—*The Medium and Daybreak*.—July 25, 1879.

BEAUTY,

AND ITS ATTAINABILITY.

(1.) BEAUTY (Fr. *beauté*).—In the Fine Arts this quality is proclaimed to be that result of all the various perfections whereof an object is susceptible, which please the senses, and more particularly the perceptive faculties. With the painter and sculptor, Nature, refined by selecting from the most perfect of the species, is the index and guide; but, as regards the architect, the creative ability of Nature herself is the model of imitation.

The primary source of all beauty in the Arts is form; on that alone must the artist depend if he would produce a work capable of pleasing. There is no doubt that in painting colour is the handmaid that decks the work with many charms; but they are all subordinate to that great effect which form—unaided by all accessories—is capable of producing on the mind.

As form is constituted by lines, it seems more than probable that an inquiry into their nature might lead the artist to the invention of beautiful configurations, and it was this feeling which led Hogarth to place so much to the account of the serpentine line. But in the Arts generally the principles are infinitely more extended; for lines which, from their propriety in one art, are strikingly beautiful, become absolutely absurd as sources of beauty in others. Hence we arrive at one general conclusion: that in all of them fitness for the purpose, and proportion to effect the object, are the

surest guides to beauty of outline, and thence naturally to beauty of form. If this be so, no general laws, save those depending on fitness and proportion, can be laid down; and perhaps it would not be a difficult task to trace to them all those associations which seem to be connected with the subject in its effect on the mind.

(2.) Beauty has been proclaimed by some authors to be "those qualities appertaining to visible objects in consequence of which their forms and colours are agreeable to the human mind."

(3.) The term *beauty* was originally applied to things perceptible to the sight; but by an easy transition it has been extended to existences discernible by the hearing, as where we speak of beautiful music, or beautiful voice, &c.

(4.) The proneness to transfer words from one object of sense to another does not, however, explain why the word *beauty* should be extended only to agreeable sounds, and not pleasing tastes and odours. But the epithet *beautiful* should no doubt, in strict parlance, never be applied to the perception of any senses except those of seeing and hearing; yet it is often extended to the results of some intellectual processes, as beautiful poem, metaphor, language, mechanism, &c. When the word *beauty* is thus employed it is merely a vague term of praise, and is then synonymous with admirable.

(5.) All incongruous or unsuitable combinations are contrary to the beauty of things.

(6.) The most beautiful proportion in a man, as regards height, is five feet ten inches; if taller, he will have a disproportionate back and legs; the chest must be wide, *oval*, and fully expanded; he should be muscular, but not obese. The lady ought to be five feet six inches in stature, with graceful, falling shoulders; and she should be *embonpoint*, or plump, not fat, but teeming with agility. Her figure, in outline, must be everywhere oval except the nose, which should be nearly straight, and in length one-third of the face, terminating superiorly at the commencement of the forehead, the latter projecting slightly over the root of the nasal organ, not in a line with it, like the noses

represented in the Greek gods, which makes the face porcine in character, and anything but beautiful as regards the human countenance. It has been observed that we often have certain comely features accompanied with a bad nose, but no one ever saw a natural perfect nasal feature without its being accompanied, when in health, by beautiful facial lineaments.

(7.) The reason why we are pleased by the perception of congruity or fitness in the general structure of an animate body, and of its several component parts, and charmed by the appearance of ease and grace in the movements of animals, with their general activity, vigour, energy, and health, is that we are gratified by the absence of all suffering, as we are pained by its presence. Thus all those objects which suggest the idea of suffering discomfort and decay are in this sense devoid of beauty. The elephant and hippopotamus, which are heavy and cumbrous in their shape and appear to drag their limbs with difficulty and effort, suggest none of those impressions of joy and satisfaction as in the animal exulting in its agility, which are recognizable in the unshackled movements of the horse, antelope, or stag. Further, all deformity in animals is inconsistent with beauty, and is ugly in proportion as the shape of the limb or body deviates from the true standard form, and is unfitted for the purposes for which it was naturally intended.

(8.) Before proceeding further in this essay, I would solicit my readers always to bear in mind that I intend in my illustrations—as regards the laws developing beauty—to display the effects worked out in the economy of Nature, rather than those resulting from the efforts of Art, which latter, though it be of the highest order, is but a *copy*—Nature being the archetype or original.

(9.) In all ages the contemplative and far-seeing philosopher has looked upon Art productions as mere reflections of Nature, and I would further point out that each copy or design is fashioned with her materials; and when action or motion is a result, the operative energy is displayed through the agency of her imponderable principles, as where heat is employed to call forth an expansile vapour, which is elimi-

nated through the agency of the oxygen of the atmosphere uniting with the carbon of the fuel, calling forth electricity and steam, which, acting on the engine—constructed of metals and wood, &c.—is thrown into motion, whereby is effected certain mechanical operations.

(10.) The thinking principle of man has mostly an irrepressible inclination to search after the origin of effects, and an innate feeling to revere, when discovered, the real and even the supposed causes, rather than the consequences or results. Being fervidly endowed with this aspiration myself, I shall endeavour—whilst proceeding with this treatise—to create a like disposition in my readers.

(11.) The appreciation of every entity, whether organic or inorganic, with the elements that cause them to act and re-act on each other, must depend upon our being endowed with a certain series of senses, the extent of which cannot in the present state of knowledge be enumerated. Our forefathers limited them to five, but five thousand would not embrace all the distinct and particular points through which the soul, by means of the nervous system, receives intelligence of the presence, properties, and principles belonging to the existences by which the inner-man is surrounded, and to all of which it may be said to form a centre.

(12.) Could man's faculties—in times gone by—have grasped or understood more of the mechanism and operations of the world's system, so as to have enabled him readily to trace the means working out certain ends in mundane economies, he would never have regarded the eye and ear as the chief seats of those senses which appreciate the fitness of parts in making up a whole, which by general agreement has been termed beauty, or that result of all the various perfections whereof an object is susceptible, and which excite forth pleasing sensations, as we become acted upon by the presentation of particular things or their emanations to our notice. To attribute to the eye or ear any capability, beyond the mere fact of being the channels through which the mind receives some of its intelligence, or becomes acquainted with the perfections or imperfections of the varied objects that operate on the sensorium, and through it on the inner-man,

would be, relative to the ear, to commit as marked an error as that of the ignorant listener to a song or concerto, who should attribute to the vocal chords of the windpipe, or the sound-board of an instrument, that feeling of music which, animating or stimulating the organs of Melody, belong only to the auditor and performer.

Again, no one would ascribe to the eye the passion of love, because by its means, through the *supposed* agency of light, we were led to notice the form that gave rise to the adoration; nor could we assume it to be the seat of affection, because through its glance we are attracted to imbibe the pulsatory influence emanating from the phrenological development of the organ of Attachment. The eye and the ear, then, are merely the passive servants of the brain, and are well adapted for their separate offices, by being the means of conducting certain special undulations or properties of matter to the great sensorium. We may, perhaps, regard the organ of vision in the light of a living optical instrument, transmitting some, and *only some*, of the effects of luminous undulations; to attribute more would be to suppose that the telescope and microscope could see, because through their aid we were enabled to detect objects that would otherwise escape our ability to recognise.

(13.) All animate and inanimate bodies are known to be continually giving off undulatory characteristic images of themselves, which effigies are endowed with certain qualities appertaining to the substances from which they emanated, and it is by and through these vibratory images that we become cognizant of the presence and properties of the materials making up the known objective world. When, therefore, the different kinds of pulsations from dissimilar substances pass into the brain, they cause the fibrous threads of the organs adapted for their reception and consequent appreciation also to vibrate and throw back other waves to meet these pulsatory images, "action and reaction always being opposite and equal." It is these iconographic (image-written) effigies that engrave themselves on certain sensitive surfaces which have been erroneously termed photographic (light-written) pictures. But luminous rays only hasten the

process, or give intensity to the undulations that are always escaping out or from bodies, since these portraitures of things can be effected in the dark, and even in the absence of the atmospheric *actin*, or chemical ray, as where produced *in vacuo*.

The ideas, touching these image impressions, will be more readily comprehended by observing the effects of a given note evoked from the horn, &c., adjacent to a number of musical instruments, each of which will be found to respond, echo-like, a similar sound or its harmonic; and every individual chord of the stringed apparatus that is in unison with the note so produced will be found, if examined, to be in a state of tremor, which may be readily detected by attaching to certain parts of them small riders made of pieces of paper. On the contrary, those strings not in concord with the created tone in question will remain quiescent. Even a noise produced in the neighbourhood of things capable of melodious vibration (as near an orchestra filled with instruments) will have this misshapen resonance, thrown into the pulsatory form and number making up a musical note; and thus modelled, so to speak, will be projected forth from the strings and cavities of the different apparatus above alluded to. I would here remark that every perfect melodious tone, as well as being made up of a certain number of undulations in a given time, assumes a distinct ellipsoid or serpentine curve, each crescent differing in length and width according to the note formed and ejected from musical instruments, as shown in Chladni's experiments.

(14.) In the brain of the embryo—whether appertaining to the Indian squaw or the civilized European—lie, like the plant in the seed and the oak in the acorn, all those cerebral germinal fibres that are afterwards to form the phrenological developments which shall serve to associate the sensorium with surrounding objects and their varying influences. In the progress of time, then, the mind must be taught, through the agency of these brain filaments, to appreciate all that is beautiful in Nature, whether belonging to the imponderable elements, or gravitating matter and its emanating properties. Thus the sensorium of the infant may

be presumed to possess the radicals that are to form, through encompassing contingencies, the man. It has been truthfully stated "that no past influences ever perish," so that each circumstance that has ever transpired is indelibly stamped upon every surrounding object, and must serve as a series of acting agents throughout all time. This being the case, it follows that the present order of things has been, and still is, influenced by all that has ever been unfolded in every age during the world's existence. (*See "Impressions left on Things," in my essays on "Matter."*)

(15.) Within the skull-cap of man then, as before noticed, lie the conducting filaments, by means of which he can become associated with all the properties and appliances of the entities which surround him, whether belonging to the earliest or later periods of time. It was through the unfolding of these cerebral nerve-loops that the phrenological organs of the brain became developed; and through their subsequent education emanated the sciences, and the instruments by means of which they were displayed. These sciences and their application originated from the wish or feeling that always existed in man, who constantly thirsted after the knowledge whereby he might read and become acquainted with the natural productions and abilities of the animate and inanimate worlds that surround him.

(16.) A SPECIAL CEREBRAL ORGANIZATION IS NECESSARY TO THE PERCEPTION OF THE FITNESS AND BEAUTY RESIDENT IN THINGS.—The indifference manifested by many of our fellow beings to excellence in the objects surrounding them is the result of a deficiency in the development and after-education of the brain organs. Thus we sometimes meet with certain persons who cannot match or arrange colours, so as to make them harmonise; and others there are who fail even to recognise them at all, so that the charms created in most persons by the varied living hues that adorn the flowers of the field and our garden parterres can give no pleasure to colour-blind individuals. This want of impressionability as regards tinted objects is owing to the inaction or deficiency of the organ of Colour. It has sometimes been noticed that certain

persons have reached the age of maturity without even knowing, much more *feeling*, what was meant by tints and pigments. Such was the case with Dr. Dalton and his brother, who were both "colour blind." Many other examples might be quoted from the pages of history. Now, the eyes of these individuals readily detected the other characteristics of objects, though tinted surfaces—however gorgeous their hues—failed to impress them. The child and the savage—when gaudy colours are presented to them—feel delight and exhibit happy emotions while handling different tinted things; but as the organization, especially the intellectual faculties, unfold and become subjected to education by surrounding circumstances, the senses of other organs wake up, and now the developement of Form is chiefly acted upon, and the tints, which at first arrested the attention, are henceforward regarded in a secondary light, and are now principally recognised as merely adorning many of the objects that encircle us.

(17.) Exercise quickens and enlarges the organs of the sensorium, and pre-disposes them to be readily aroused into action, and under this repeated excitement they grow and gradually enlarge like as do the muscles of the body. It is the continued employment of the intellectual brain developments that produces the accomplished master and the erudite philosopher.

(18.) PRACTICAL EDUCATION.—In most instances this process is necessary to effect a just discrimination of the beautiful in objects and their relative connections; and be it observed that I include in this education the effects that all things and their accompanying qualities, with the imponderable elements, produce, as they act on us in our walk through life, whilst obtaining the knowledge that is the result of experience, which is never acquired whilst shut up within the walls of colleges, as now constituted, or by perusing the pages of printed and written books.

(19.) Direct oral education with correct experimental training is essentially necessary to the creation or formation of a well-developed head and its accompanying beautiful features.

(20.) In the earliest ages of the world, there must have existed a desire to interchange the sensations and ideas that pervaded the different races of men ; and in order that they might describe their perceptions to each other, with the impressions these gave rise to, language sprang up, to image or represent which certain symbols, called hieroglyphics, and then letters were agreed upon, and subsequently other characters were fashioned, designated numbers. Out of these grew the description of the arts and calculations as regards the different sciences.

(21.) We learn that in the dark ages a profound respect, nay, veneration, was paid to the few who could decipher these significative marks or indications, and thus the unlettered and even the literary individuals of those times were led to regard and become attracted by the shadowed image, to the neglect of the substance, until the feeling grew into a kind of mania, whereby the masters became inoculated, and at last teachers and taught attached more interest to the signs than the things they served to delineate or explain. It may still be discerned that a vast deal of this feeling remains in our present schools and universities ; and most scholars even now are led frequently to neglect the object described, whilst contemplating the tools or helps and their usages, which at best can only *assist* us to instruct ourselves, or to aid the comprehension of others. The acquirement of languages, then, with the knowledge of figures and tact in the use of instruments, should have bestowed upon them no more than their just or practical value, and ought only to be regarded in the light of certain means enabling the intellect to grasp things, rather than their descriptive representations.

(22.) It is a well-known fact that most, if not all, of the useful, grand, and beautiful discoveries that have ever been made in the arts and mechanical sciences, and even in natural philosophy, were brought to light by individuals unskilled in mathematics, and unlearned in dead and foreign dialects.

It would appear that the slavery undergone, whilst young, in acquiring the different lingual modes, whether ancient or modern, of expressing merely in dissimilar sounds the same things, prevents the natural enlargement of the various

innate perceptive portions of the brain, by exercising one faculty (the phrenological organ of Memory) to the neglect of the others, which proceeding cramps all natural genius, and prevents the proper development of the body generally, for nearly all persons of genius, whether men or women, were and are handsome and well-proportioned.

In confirmation that the man of genius springs from the ranks, I quote the following :—

(a.) Michael Angelo Buonarotti was the son of a poor citizen of Florence, who parted with him to a common stone-mason for 18 florins. He finally became a sculptor, painter, architect, and poet.

(b.) Sir Thomas Laurence was the son of a poor man of Bristol, and received very little education, but was a self-taught scholar.

(c.) Telford, the great engineer, was the offspring of a shepherd, and was apprenticed to a common stone-mason. He, like Locke, knew nothing of mathematics, and used to say that figures were of no use in engineering and practical science.

(d.) Rossini, the grand originator of modern music, was a barber's boy.

(e.) Faraday, the greatest chemical and electrical experimenter of any age, was originally a poor shop-boy.

(f.) Trevethick, a common Cornish miner, was the inventor of the locomotive railway engine.

(g.) James Watt, the great steam-engine improver, was the son of a very humble tradesman in needy circumstances.

(h.) Hume, the great historian and essayist, was the offspring of very poor parents; his mother kept a crockery stall, at times upset by way of diversion by Lord Panmure.

(i.) Æsop, the prince of fabulists, was an Athenian slave.

(j.) Milton was the son of an innkeeper, and was said to be, like Oliver Goldsmith, a great dunce at his first school.

(k.) Butler and Burns, both celebrated poets, were the sons of small farmers; the former died in absolute want.

(l.) Alexander Pope was the son of a linen-draper, and, like Burns, was a self-taught scholar.

(*m.*) Canova, Antonio, one of the greatest of modern sculptors, became an ambassador, and was then created a marquis. He was a native of a small village in the Venetian States, and was originally a poor destitute boy.

(*n.*) Claude Lorraine, the great painter, was apprenticed to a pastry-cook. Nature was the constant object of his study, and the result of his observations he transferred to the canvas with unrivalled felicity.

(*o.*) Morland, George, the greatest natural artist of his day, was the son of a necessitous and indifferent painter; he would never look at anyone's pictures, and always copied his beautiful objects from Nature.

(*p.*) Opie, John, when young, was a self-taught school-master, but afterwards became a celebrated painter; he was the son of a common carpenter, living near Truro, and worked in a saw-pit.

(*q.*) Shakspeare, William, the glory of the drama, was the son of a woolstapler. All the teaching he received was at the village-school. He afterwards became a prompter's call boy at a theatre, and then an indifferent actor, and finally the greatest dramatist of any age.

(*r.*) Linnæus, the great botanist, was apprenticed to a shoemaker; at 19 he was sent to school, and was there called a dunce and blockhead; at 21 he was almost ignorant of everything except the knowledge of plants.

(*s.*) Stephenson, the great engineer and improver of the locomotive engine and railway carriage, was the son of a collier, and worked in the pit with the other labourers.

(*t.*) Moore, Thomas, the celebrated Irish poet, was the son of a humble grocer, and the grandson of a weaver.

(*u.*) Newton, Sir Isaac, was the son of a little farmer, residing at Colsterworth, in Lincolnshire; he was said to be a very idle boy, and when at school was considered a great dunce. He matured his minor plans under his mother's hedges, and in the apothecary's garret at Grantham.

Most of the mighty works of the world have been accomplished by poor men.

(v.) Sir William Herschel came to England, when a youth, from Germany, as a street musician; unable to buy a telescope, he made one for himself.

(w.) "Rare Ben Jonson" worked—trowel in hand—as a bricklayer.

(x.) The great Napoleon Bonaparte was the son of a poor man.

(23.) Further, as regards the subject of education, it is worthy of notice that through biographical researches it will be found that all the original thinkers and inventors among those bred up at academies acquired, during their earlier studies, the appellation of dullards or blockheads as regards scholastic acquirements; such were Milton, Newton, Sheridan, Goldsmith, Linnæus, Gall, Byron, Scott, and a hundred others, who were all observed to make little progress, when young, in the acquirement of languages and figures. The cause of this mental condition is very evident. These individuals were, at this period of their lives, busily engaged in lending themselves to the poetry of the acting and living world; and, being possessed by their own thoughts or impressions as regards the varied objects that then surrounded them, they could not suffer their youthful feelings to be shackled by the dry dissertations and writings bound up in ancient tomes. No; they—boy-like—were attracted to abandon themselves to the influence of unfolding realities always to be found transpiring throughout the huge book of Nature, which ever lies open to all who have organizations and sympathies wherewith to read it, and these youths followed the dictates of their then inclinations, rather than the study of representations and learned descriptions bound up in musty volumes. But when the season arrived, and they became struck with the use of these resources as a means that might assist them to display their own great abilities and ideas, they then grasped these tools and appliances employed in college discipline, and by application—as regards their usage—they created a distance between them and their then companions that defied all competition.

(24.) TOUCHING THE DEVELOPMENT OF THE DIFFERENT ORGANS OF THE BRAIN—The nerves of the animal system

(like the wires connected with a galvanic battery when in action) influence and preside over the economy of the body, causing the changes that take place in its every tissue. It has often been demonstrated (by casts and measurement of the head) that the continued or excessive exercise of any one organ of the sensorium quickens and enlarges that development, and must in a measure preclude the necessary or required (as far as health is concerned) employment of the other portions of the brain that act on distinct viscera, or certain membranes; hence often arise, first disorder, then disease, followed by deformity of certain parts of the body; whilst, on the contrary, where the organs of the sensorium are equally balanced, each individual viscus and tissue receives that proportionate quantity of nervous excitement necessary for their economy, which condition, when assisted by surrounding congenial circumstances, produces a healthy frame, accompanied by beauty of bodily features, because each part will act in harmony with the others, and thus tend towards natural perfection.

(25.) AS REGARDS THE OVER-DEVELOPMENT OF PARTICULAR PARTS OF THE BRAIN.—The most unfortunate incident that can ensue as regards any individual is to have a phrenological organ that may be too large or active in relation to the influencing operation of others. It will always be found that such a person so endowed becomes the slave of this overgrown development, to the non-use or only partial employment of other parts of the brain. Such characters come under that class designated "one idead beings." Thus a person having a large organ of Order is always, if a woman, arranging and cleaning her ornaments, or adjusting the house utensils and attending to the domestic circumstances. If a man, he will generally be employed in correcting the productions of others, but never brings forth anything of his own. This corrective propensity often leads to the failing designated "officiousness;" such are frequently found employing themselves in arranging the trifles found displaced in his house or the domains of others. Again, people who have the organ of Memory large may grow into great compilers or literary imitators, but they seldom, if

ever, become authors of anything new, either in poetry prose, music, or painting, &c.; nor do they display any ingenuity in mechanical constructions. Be it further recognised that this retentive capacity belonging to certain individuals is the result of two circumstances: either it exists as a natural propensity, from over-development of this portion of the brain, or has been acquired by particular habits, as close and extensive study, or from scholastic tuition. Be it also noticed that where the organ of Memory is overcharged or taxed by too much attention to the performances of others, there will be no periods set aside for the exercise of innate native talent. As only one portion of the sensorium can be exercised positively at a time, of course the continued tasking of a certain organ precludes the appliance of the rest, which habitude often robs us of that health we might otherwise have reaped by bringing into action many organs in succession, by yielding to the promptings of our varied natural propensities.

It has frequently been noticed that ardent poets, painters, and musicians endowed with great sensitiveness generally die young. This event ensues from the circumstance of keeping certain parts of the body too immediately under the influence of one particular brain organ. It may be here noticed that the above characters are mostly found to be unacquainted with erudite natural phenomena and general practical knowledge. On the contrary, the hunter after occurring facts, and the reflecting philosopher—who make the arts and sciences and the arcana of Nature an occupation and a life study—live to an advanced age, because they employ in succession each organ of the sensorium, thus bringing, in its turn, each viscus and tissue of the body, directly and indirectly, under the dominant sway of each cerebral development.

(26.) EDUCATIONAL ANNOTATIONS. — Individuals with large organs of Memory, who apply themselves almost exclusively to mere book learning, whether at school or elsewhere, often become a kind of walking encyclopædia, and may frequently wake up the wonder of the crowd by retailing out here and there portions of their mental

crammings, but they will never engage the attention of the individual engaged in practical science, or the man of genius.

Had Michael Angelo Buonarotti been bred up amid the forms and trammels of a college, the world would never have been astonished by the magnificence of St. Peter's at Rome, nor those wonderful pictures and marbles that were the works of his hands, guided by his mind and head.

If Rossini had been so unfortunate as to have spent his youth amid the dull formulæ of academic routine, where nothing practical can be obtained, either tending to the acquirement of demonstrative facts or the development of useful knowledge by experiment, he would never have founded the modern school of music, which has so often entranced the world with melodies that have frequently made the human frame tremble with delight.

The same may be said of Newton and his discoveries; and a like tale can be told of ten thousand other characters whose productions have enlightened and tended to civilize the world at large.

In addition, it has often been noticed that clever sensitive pupils who are kept closely to book-learning die young, by engendering disease, from too much excitement of particular portions of their delicate brains. It has also been observed that the youth found apt during his first lessons, and a good classic or mathematician in his adolescence, is in after-life seldom celebrated for anything else, and is rarely ever heard of beyond his own circle, or far from the walls that environed the institute wherein he received his tuition.

It has been often suggested by the reflective that we begin our book instruction of youth at too early a period, and at the wrong end of the ladder that leads to the acquirement of knowledge, dictating from its summit, rather than from the rounds which conduct from its base. Should we not orally make the youth familiar, step by step, with simple things and facts, and then demonstrate their associations, and then afterwards set him down to written descriptions and annotations? Teachers forgetfully presume that, because they know and understand a subject, their pupils ought

readily to apprehend and comprehend it too; forgetful of the troublesome path through which they themselves had toiled to obtain perspecuity and capacity.

Again, instructors too often lose sight of the vast labour undergone by themselves before arriving at the corridor leading to the temple of knowledge, where preceptors, when authors, sit down to write books; and yet tutors begin instruction by opening these very volumes to teach therefrom the scholar whose foot has scarcely touched the first step of the stairs by which he is to climb to the chamber of understanding. Masters seldom reflect, whilst educating, that the young learner is without their erudition which gives them the abilities they possess. In addition, scholastic tutors too often forget that the pupil is minus the experience through which intelligence dawned on themselves. Therefore it behoves preceptors to recollect, whilst educating, that the books they offer to the youthful learners were compiled in the light, on the hill-top, and that the stripling is still in the dark valley, not yet catching the illuminating rays that would enable him to understand whilst reading. No wonder that the novice finds his books tiresomely dull. He has nothing in his mind wherewith to associate their contents, and discerns in them no relation in regard to his young ideas, which at this period of his life are few and simple, and, from want of organic brain developments and knowledge, the tomes in question appear to him incomprehensible. Therefore, whilst learning by rote, or without understanding, his sympathies are not attracted by the contents of the works placed before him, and he therefore soon forgets the set task, and becomes disgusted whilst studying that which he cannot understand.

No youth should ever be called upon to commit to memory that which he does not comprehend at the time of being taught; for the so-called knowledge thus acquired is as useless to him as would be an artisan's implements in the hands of an uninitiated individual.

(27.) THE IMPRESSIONABLE CAPACITY OF THE SEXES COMPARED.—Teachers or instructors have always recognised that girls and women, under like experiences, excel boys

and men as regards their aptness in receiving instruction ; but they are not, as a rule, superior in regard to their reasoning ability, because the reflective organs are larger in the male than in the female, by reason that the latter exercises the feelings more than the thinking faculties. The foregoing statement, as regards the female, is particularly demonstrated whilst teaching girls to dance and sing, or play on the pianoforte, and also during the learning of the living languages, &c., &c.

Again, the ready imitative ability of ladies is especially manifested whilst portraying life character as witnessed at our theatres. In continuation, the female apprehensiveness is especially experienced where the preceptor works with (as in the Hamiltonian system) or solicits, rather than commands, the fair pupil's attention to her studies. Now there must be a reason for this female ability, which will be found to depend upon her ready impressionability, or competency of imbibing through her sensitive capacity the qualities of things and bearing of the circumstances that may surround her person.

How often have I, with millions of others, witnessed the female aptness as regards her intuitive capability of reading or predicting the future through the "foreshadowing of coming events!" How frequently have I heard different men (after becoming acquainted with a particular character or having experienced a certain circumstance) exclaim, "Had I obeyed that lady's suggestion, or followed my wife's advice, and acted as she prompted, I should have avoided that person, and escaped this consequence!" I would here ask how the female is thus rendered capable of coming to her conclusions? If we interrogate her, the answer will be, "I do not know, but I feel that, in the unfolding of a certain incident, such and such circumstances will follow as a result." The prognostic ability belonging to animals has received the vague appellation of instinct ; but whether this capacity belongs to the human race or the creatures of the woods and plains, it is a like faculty, and springs from a like source, viz., perception or prevoyance of future occurrences by the feelings.

Socrates in his remarks states that "women feel and men think," but the female can cogitate and reason well when taught by experience, like the man, to think for herself.

Further, it may be truly assumed that it is through certain sensibilities that impressionable human beings become endowed with the capacity of acquiring knowledge. Now this being the case, and the woman having tenfold more sensibility than the man, she of course, through the plasticity of her composition, will receive instruction, both naturally and artificially, more readily than he can. This capacity would be continually demonstrated if women were better comprehended, and their capabilities called forth by certain modes of practical and verbal education, which method both sexes are at present sadly in want of; and especially would this be the result if we allowed women to reap the same experiences that men go through, which would be readily accomplished if they associated more together in their earlier studies and later amusements and occupations. Moreover, ladies ought to be admitted into our public schools, as they are in Germany and other parts of the world. If this mode of proceeding was adopted, it would be found that after a few generations (for habits, propensities, and capabilities descend from the mother to the child) women would then grace the Senate as orators, adorn the galleries of Art as operatives, and finally become as fitting expounders in the halls of Science as the learned philosophers that now teach therein. It is customary with men to proclaim that women are inapt, because they do not readily comprehend many of the subjects presented to them. But how, I would ask, should their condition be otherwise? They, the fairer portion of humanity, have not reaped the advantages that men have. For instance, whilst he roves at large, she is pent up at home, employed either in trifling away life in the drawing room, &c., or continually engaged with domestic concerns, and of course lacks that great stimulator of the capacity—experience.

The condition in question may further be illustrated by comparing the youthful town sharper with the country plough-boy. Neither, perhaps, can read or write,

but the one has been knocked about by circumstances, and the reaction that has taken place in attending to these impressions from without has sharpened his intellect, or wits as they are commonly termed, and he, in his station, is called intelligent, whilst the peasant lad, who, under the same circumstances, would have become equally acute or capable, has never had his nervous system roused into action, and of course he is still found to be the crude ore; but had the refiner experience, been applied to his frame, he, the clown, would have shone like the city youth, and have reflected back the light thrown upon him, as does the metal mirror after going through the hands of the polisher.

(28.) THE SEXES COMPARED AS REGARDS MANNERS AND DEPORTMENT.—It may be often recognised that the youth of eighteen is graceless in his movements, or slouching in his gait, and, on entering a room in which visitors are assembled, he frequently comports himself so awkwardly that, but for his habiliments and other contingencies, he might be taken for the son of a peasant rather than the offspring of a gentleman. What a contrast to the young lady, his sister, who counts fourteen summers! She glides into the apartment occupied by the company with the ease and grace of her mother, modest confidence mantling her whole frame. Further, let us watch the brother and sister as they tread the mazy dance. He has undergone ten times her tuition in learning his steps and moving through the tortuous race, yet the youth is seen to disport himself, as regards time and movement, as brusquely, in a degree, as the boy on the village green, now too slow, and anon too vehemently; whilst the young lady appears to glide over the ground like a sylph or child of Terpsichore, gracefully abandoning herself to the “bounding measure,” calling forth admiration in her every movement. Again, as regards the gyratory waltz; the youth, whilst treading this disportment, puts one in mind of the tyro taking his earlier lessons, whilst the maiden glides round the room, seeming to scarcely touch the floor, more like a spirit that has escaped the cloying weight of ponderable matter than a being possessing gravity. Note also the character of the two sexes under

education. Boys are generally found impatient and sometimes rude during tuition, and often very dull as regards comprehension, and, what is remarkable, very seldom grateful to their teachers. How different is the bearing of young ladies! They are mostly the impersonation of diffidence combined with modesty; they listen with gentle attention to each outpouring from their instructors, repaying back in affection those who kindly and encouragingly educate them.

(29.) In continuation, I do not intend to hold that woman can surpass, or even equal, man in some of his bolder flights in designing, enhancing, amending, or adding to certain things that may cross his path. He, it must be acknowledged at present, often soars into regions where she would grow giddy and fall short of the daring required to accomplish the feat. But how few among the sons of men are there that can claim the title of "genius!" To deserve this appellation, he must either discover, invent, or improve that which has been devised or fabricated by someone else.

Again, if we examine this so-called genius closely, he will be found to possess the sensibility of the woman, added to the stern energies of the man. In fact, it was the impressionability of his system that gave him the capacity to imbibe the essences or qualities pervading the things that encompassed him, as he dived deeply into, or floated over, the stream of events, and anon soared—poet like, as it were—into space, to become the companion, for the time being, of the literated intellectual spirits appertaining to the sages of bygone eras.

(30.) DIGRESSIVE OBSERVATIONS.—In the pristine state of the human race, when men's dwellings were situated in crude and wild countries, they chiefly employed themselves in attending to their immediate or necessitous wants, and being as yet unaware, for lack of education or experience, that there existed any other requisites or appliances wherewith to increase their pleasures (ignorant also how much these would multiply their pains) they were contented, and looked perhaps no further. But as time rolled onwards, certain changes were unfolded, and men became conscious of fresh

inclinations and appetites, which were developed from expanding circumstances, combined with certain innovations springing into action from the intercourse entered into between adjacent countries. In the course of time these new feelings at last engendered discontent, and there arose a desire in the minds of some of the community to change their *hen* condition; and now the one urging the other forwards, they sought—either in their own country or abroad—the means whereby they might satisfy their recently acquired appetites. After a time these said impressions began to engender acquisitive desires, which finally led to disagreements, followed by wars, instituted in order to obtain the means whereby to satisfy these new inclinations. But observe the sequence. Hostilities ceasing, and the conqueror having obtained dominion over his opponents, he proceeded to make vassals or slaves of the vanquished, in order that he might indulge in idleness and luxury, whereby, in one sense, he degraded himself by becoming dependent on others for that knowledge and help which self-employment, combined with industry, would have afforded him, added to which would have been that particular pleasure only felt whilst contemplating our own handiwork—the source of so much gratifying thought and enduring action, with consequent health, followed by the gratifying evidence that “employment is merely another name for happiness.”

(31.) As the tide of events changed, and man began again to labour for himself or the public welfare, he became possessed with a greater interest in the result of his efforts, and, thus incited, he sought to establish a kind of freedom in thinking as well as acting, and at times, when reposing from his avocations, he was induced to exercise more strenuously his reflective faculties. This action after a time woke up certain hitherto dormant brain developments, the operation of which stimulated him to follow the bent of his awakening discernments, and urged him onwards to institute various experiments or researches that tended finally to open up the path through which he might pass whilst seeking after the causes of the many beautiful effects resulting from the processes continually in operation throughout the varied

and ever-changing economies surrounding him. Thus employed, man lent himself more and more to Nature's exciting influences, which wrought changes in him. These innovations he communicated to his companions, in whom they begot other mental ideas. By means of these promptings, the human race discovered, and afterwards enjoyed, a thousand connected beauties and charms belonging to the great world, of whose existence they, in their former state, were ignorant. In fact, they were incapable of observing them until their brains became in a fit condition to receive such impressions.

(32.) It was from the truthful contemplation of the beauties in Nature that sprung up the varied happy results brought out in the arts and sciences; but be it observed that, with all our vast knowledge, we are incapable of comprehending how any one effect is developed in the natural world. All that we can determine is that they do transpire. It should be remembered that every result in Nature is the consequent of thousands of accessory and connected causes—the one depending on the other; but too often, whilst recognising the proximate producers of certain events, or the last links in the chain of antecedents, we deem that we have grasped a knowledge of the whole occasioners of the performance, whereas it is evident to the reasoning philosopher that, had any one link given way in the unfolding of the series making up the coil of causation, the ultimate issues witnessed would not have been manifested. Be it further recognised that no opening has yet been discovered—nor is there a shadow of a prospect that there ever will be one—through which we may hope to gaze, to afford us a ground even for conjecture, much more to render us satisfied, after what mode Nature effects any of her economies. How different with the productions of Art! Only pass behind the scenes or lift the curtain, and the process or stratagem is immediately discovered and understood.

(33.) It may be truly concluded, as before observed in my work on "Matter," that all the fabricated devices of man display their operative effects by or through Nature's

imponderable spirituous elements, acting on gravitating matter. To her capabilities, then, we must ascribe the original source of all the effective motor productions, whether artificial or natural, that surround us.

These postulates being granted, we should, I think, descend from the pedestal, erected for the gratification of pride, upon which either our own presumption or the silly usages of society have placed us. The time is not far distant when we shall cease to be attracted by the crowns of kings, the coronets of peers, or swayed by the doctorial caps of colleges, and the wigs worn in our courts of law, together with the gowns or robes assumed to distinguish from the crowd certain individuals in office. All these indicative devices only serve, as do jewels, ornaments, and dress* to create the derisive smile of the reflective philosopher, who prefers to reap distinction through his knowledge of the glorious products that surround him, which originate from the ever-acting principles discoverable in Nature's laboratory. Let us, then, in the future avoid all this foolish "circumstantial pomp," and hereafter be admired for disdaining these ridiculous badges (of barbarian origin) which are at present made

* NOTE. *Costume or style of vestment.*—Of all the enslaving customs or practices appertaining to the human race that of fashionable habiliment is the worst. In times gone by, the folly of bedizening the person in certain ridiculous attire, which originated among barbarians and savages, was carried to a very great extreme, both as regards the woman and the man; but during the last century it was so derided by the Press (especially in the *Spectator*, wherein it was stated that the tailor, not knowledge or tact, made the man) that the masculine public began to assume the useful instead of a preposterous garb; but at the present period ornamental raiment only obtains with females and men in office, as soldiers, judges, the heads of civil institutions, and also in colleges, and at times in the Senate. The Americans, as regards the male attire, have very wisely abolished from the educational and legal establishments all the insignificant parade of personal decoration. I am tempted to prophesy that there is a time coming when the female part of humanity will hold a position where she will share and occupy with men all public offices, and exercise the practice of the learned professions, and, as far as her strength will allow, the mechanical occupations; but when this period arrives, she will have abandoned the deforming and frivolous folly of dress and jewellery for the wisdom and capability of address. Then, instead of being man's slave, she will be his equal and adviser, and still remain his loving companion.

use of but to distinguish office. Thus disentangled, we shall in a degree be better able to perceive that genius and science have but fettered or attached our mechanical apparatus to the motor energies appertaining to never-resting Nature. Having arrived at this conclusion, we shall cease to claim the ability of originating the causes that effect the working of the different constructions that are made use of in our motory appliances.

For example, we cannot, by the nicest arrangement of the parts making up the steam-engine, excite in it self-motion. To call forth motivity there must be employed the elastic cogency exhibited through the agency of an expansile vapour ; and the effective sway of this latter body must be regarded in a secondary light, because it owes its chief motile energy to the evolution of heat and electricity liberated through the union of the carbon of the coal with the oxygen of the air, which latter result could not have ensued had there been no magnetic affinity between this gas and the carbonaceous body in question.

Again, to a magnetic operation, or polar state of matter, so to speak, is every kind of motion due, whether appertaining to organic or inorganic entities. For instance, as regards animals, if we prevent them from consuming, or rather creating, carbon out of unparticled matter, either in their skins, lungs, or bronchiæ (gills), we arrest their capacity of liberating heat and electricity, and of course prevent any further functional action or movement in their organs and tissues.

(34.) AS REGARDS TIME.—Most persons are acquainted with the fact that the measure of time, for the business of life, is divided into parts, and can readily be distinguished and read off (without understanding the action of the apparatus denoting it) by persons in general through means of the hands situated on the faces of watches and clocks. Now the artificer, or a person instructed by him, is supposed to be capable of making us aware by what law or process the time-keepers in question work out the beautiful results discerned so readily by most individuals. But philosophy incites us to look further, and urges us to trace the cause of

the motor operation in these chronometric apparatus to sources not evident to the unreflective multitude, such as referring, for instance, the action of the balance wheel in the watch to a property of matter vaguely termed elasticity (see this article in my work on "Matter"), residing in the main-spring; and further, ascribing the oscillations of the pendulum of the clock to an energy exerted on its suspended weights by the earth, and ambiguously termed attraction. But we are tempted to trace the cause of these phenomena to another source, and shall consider the horary performance, as governed by the natural divisions or multiples of the transit of that vast time-keeper, the earth, which, through a magnetic phenomenon, is the primary agent of the recognised motion taking place in horologes; for could means be found to arrest the oscillatory and rotary movements, with the undulatory serpentine orbital course of the earth, the works of the watch and clock would become stilled for ever, no more to warn us of the lapse of the sleepless hours of existence.

The time-keeping implements now in use cannot be put in motion, so as to determine the sub-division of periods, by different agents; but their action must be attributed to one sole derivative, which would be made evident to our senses could we remove the various screens that intercept us from tracing causes up to their fountain head.

(35.) It has often been demonstrated that a body in motion becomes electro-magnetic, which condition is increased according to the rapidity of the movements; it has also been shown that this motile body, on approaching another object, excites in it electro-magnetic phenomena by induction. This being the case, it follows that our globe, from its very vehement and varied motivity, must always be in an electro-magnetic state, which condition must endow all the loose materials that crowd its surface with a like property, only, of course, the intensity of the earth's electricity, from being spread over so vast a surface, cannot be readily detected by the apparatus at present in use for the appreciating the presence of this fluid as it sweeps diamagnetically from east to west, or in the opposite direction to that of the polar

magnetic element that flows from north to south, which can be so readily demonstrated by a pendant oblong loadstone or the mariner's compass.

(36.) Time may be considered in an abstract sense as a real thing external to ourselves, which would have an existence and a measure, both of which would remain, though those who now speculate on the conception were annihilated ; and, whatever may be the essence of time as an entity, it is a reality to man, cognisable by a natural organic faculty through which he observes its lapse.

Some persons who possess a large phrenological organ of Time have often been called walking chronometers. These individuals can always keep their time appointments, and are frequently found capable of announcing the hours of the day, without looking at a timepiece, and can proclaim those of the night when they themselves are enwrapped in darkness. I was many years ago acquainted with a medical student (Mr. R. Long) who became endowed with this organic ability, and he was usually called by his fellow-pupils the "living clock," and sometimes the "night repeater." The earth is known to oscillate on its axis in exact periods. These vibrations are the result of one of Nature's magnetic laws, and are developed in all bodies when they are disentangled from obstructions, and free to move.

Time, so important to man, has often been stated to be without a definition, and a second, a day, or a year, &c., have been considered as independent of other circumstances. We now know, however, that a second measured by the swing of a pendulum is identical with that motion, and the movement itself is a mere deflection or bending of the combined motions of the earth. We also know that all other times are identical with the relative motion of the system in which we are involved.

If a delicately suspended pendulum be placed between the positive and negative poles of two loadstones, it will be found to vibrate alternately and continually between the points of the magnets. Again, if a plate of copper, to which is attached a wire, be buried under the native soil, and a sheet of zinc, similarly armed, be deposited at a distance, also beneath the original ground ; then if the attached wires of

both the separated plates be applied to the pendulum of a properly constructed clock, it, the clock, will be observed to keep time with the sun's course over the earth. Further, a single galvanic battery would be found capable of keeping in correct play, by means of connecting wires, all the clocks of the largest city in the known world.

Mr. Bain's electrical clock was an instrument which could be set in movement by the otherwise insensible currents of the magnetic principle circulating in the superficial strata of the earth. If we connect the zinc pole or end of De Leu's battery with one of the gold leaves (in the instrument where the leaves are made to slide from each other) and the silver end with the other gold leaf, they attract each other, and, having thus by contact annihilated their opposite electrical states, they separate for a second, and then again attract and disunite as before, forming a perpetual motion that will keep in action for years. A small clapper may be kept constantly vibrating in this way between two bells. (*Daniel's "Chemical Philosophy,"* p. 193.)

In the tropics, the hour of the day may be known by the direction of the needle, as well as the oscillations of the barometer. (*Humboldt's "Cosmos,"* p. 170.)

Many other things will record the hours of the day, especially certain flowers. Were our senses equal to the task, we might read the lapse of time upon everything that has a being, whether animate or inanimate.

Professor Wheatstone constructed an instrument that he called a polar clock, which marks with great accuracy the time of day. This instrument is far more useful than the sun-dial, since it is not necessary that the sky should be cloudless (*Chambers's Papers, vol. iv.,* p. 18.)

(37.) The wisest of men are no further advanced in regard to a knowledge of the processes by or through which Nature accomplishes her results than the simplest peasant, who toils from youth to age in the same circumscribed nook. The only difference between the philosopher and an ignoramus is that the latter has become acquainted only with his tens of facts, and perhaps deems his knowledge to be great, whilst the former is familiar with his thousands of sequents,

and he exclaims of himself that he has cognizance of nothing. Both parties may be advancing, during the period of their existence, along the same line, or climbing the same heights, only the scholar has progressed higher in his upward path than the general observer, so that his views have become more extended, and the objects opened up to his inspection are greatly multiplied, convincing him that the longer and higher he climbs the more will they increase in number. He, the philosopher, will also become conscious that his capabilities to understand the workings of Nature become inefficient from the increased plurality of their proportions and connections, and the many new phases they unfold, so that he is constrained, like the Greek sage, to exclaim, "All that I know is that I have no knowledge of anything."

Could we wake up into mortal being, after having been entombed for a thousand years, we should, as will then our spirits, find discovered and in use many new and demonstrable energies (or rather variations of the same elemental appliances) quite as effective, as regards capabilities, as those now produced through our present knowledge and use of electricity, magnetism, steam, &c.

(38.) How few, amid the aggregate that crowd our busy localities, are ever led to inquire or examine into the economy exercised by any one of the ever-acting principles that pervade the world's natural system; and there are fewer still who strenuously seek to comprehend after what mode Nature urges her imponderable elements onwards to accomplish the vast and mighty processes continually in action within and without the gravitating materials making up the globe we inhabit.

The busy work-a-day world little dreams that if any of the many qualities, and especially if one of the imponderable elements pertaining to the earth's constituents, were withdrawn from the materials now composing it, they (the materials) would have no being or existence recognizable by our senses and feelings, and of course the entities that now arrest the attention would elude our perceptive faculties, since every individual thing, and even the vast universe itself, would become a nullity.

For instance, by abstracting from substantive things their ever-motive innate heat, or by deducting from them their continually undulating magnetic and diamagnetic or electric elements, where would be their now distinctive character? As far as the capability of our present condition is concerned, the all we now contemplate would then become a nothingness, since each substantive entity must lose its form, colour, hardness, and extension, &c., and thus chaos would reign supreme, and Nature and her works would be annihilated.

(39.) In returning to our original theme, I would remark that the requisites constituting beauty, though often alluded to by annotators regarding this subject, have seldom, if ever, been truly defined; nor have the causes that direct or preside over perfect development been correctly discussed. Further, the modes and means through which we appreciate the beautiful, appertaining to surrounding objects, have seldom been thought of, much more those causes that disturb or interfere with the accomplishment of Nature's first purpose in the unfolding of her works.

Beauty must be developed through certain definite proportions, with their accompanying qualities, that admit, though at present unknown to us, of measurement in the one, and calculation in the other. Had we the requisite knowledge and necessary means whereby to define the proportionate quantity and properties belonging to each object, we should all agree as to what ought to be the symmetrical form and disposition of everything presented to us, as at present we do when determining an amount by the employment of numerals. Thus, everyone arrives at the conclusion that two multiplied by two produces four as a result; any other numbers or proportions of numerals combined either fall short or exceed the amount in question, and fail in expressing the truth. Again, had we been always more sensible of our deficiencies, and decided in our reasonings, that a juster estimate of the properties and forms of Nature's productions was necessary to our correctly appreciating things, and made exactness the chief object in our pursuit of knowledge, and, failing in this capability, have confessed our ignorance

and incapacity of grasping the subject under discussion, we should not have dictated so many absurd and whimsical definitions of the essentials constituting beauty, as we find detailed in books analyzing this theme.

(40.) Beauty, I think, might be defined as the perfection of Nature's intent, where all the parts and bearings of an object are in keeping, and only equal to the harmony of the whole. The term *beautiful*, as before observed, may perhaps be applied consistently to everything that can incite within us the feeling of pleasure, and is attached with propriety, not only to substances, but to their elements and emanations, for it is by or through their iconographic (image-writing) undulations that the forms and properties, &c., &c., of the bodies surrounding us are made evident to our senses.

(41.) Some observers and discriminators were aware that it was through especial sensibilities and innate promptings that certain persons were rendered capable of taking cognizance of the fitness of things, and they designated this refinement of feeling by the word *taste*, by which term they summed up the whole comprehension of perfection, making an easy task in this their definition of the quality in question, forgetting that no one can have a full sense of the whole or total of an object unless he understands thoroughly the parts composing its aggregate or *tout ensemble*, as well as the mode and manner in which the components work in association or are adapted the one to the other. The taste of the moderns, and the *sapientia* of the Romans (by which they signified quickness and correctness of judgment generally), with Shaftesbury's definition of it, as the sense by which we appreciate manners, morals, governments, with ingenuity and beauty, spring from a vast number of faculties, all resident in the great sensorium, and in fact constitute and qualify its organization. Some have assigned the origin of taste to the imagination, which, like the term *peculiar*, is one of those words of which too many exist in language, invented by orators and authors to hide their ignorance. We are often led to devise unmeaning epithets, technicalities, and sentences to fill up what would otherwise be a gap, or interrupted sequence, and behind the shadow of these we

creep, to conceal rather than avow that much of our supposed knowledge is merely assumption or pretence.

What is imagination? It has been attempted to define its signification by other empty and senseless words or phrases, such as conceit, fancy, ideal, pictures, images in the mind, all of which mean anything, something, everything, and nothing. It should be remembered that whatever can produce thought, feeling, or action must be an entity and a reality. The very word, *imagination*, explains its import. It is iconography, or image-making, to produce which we require an original whereby to form a model, so that all we can conceive or depict to ourselves are merely copies of what at one time has been or is still in existence. The pictures or representations of everything—as before noted—which has ever been positively exhibited to us, inducing sympathetic feelings, are no doubt for ever engraved or iconographed on or in the sensorium; and it may be readily conceived that when an object meets the view, or any circumstance takes place recalling the senses, or rather the soul, to foregone influences, the portions of the brain whereon these impressions were stamped are thrown into a kind of tremor, and in this way wake up in our spirit's memory the written effects produced on the brain by our past experiences from the things and even the passions and deeds that we have been associated with during life.

If we had the ability to form a perfect being possessing every natural requisite, and had we likewise the capability to place him so that he could never be influenced by objects or their operative influences, where would be his imagination or conceptions? The brain of such an individual must be, as regards fancy, a dull void, and he himself unconscious even of his own existence. Where is the imagination of the young infant, and the helpless idiot? If they have any capability of imagery, all persons must agree that it can play a very faint part as regards the nervous system. The being to whom pertains this so-called imagination must have been educated by events, and be possessed of distinct organic senses, or he will be as unimaginative as regards each object or subject for which his organization is not, through

circumstances, adapted, as the clods or stones that may support his steps as he wends his way through life.

(42.) Some individuals have attributed the feeling of the sense of beauty to the pleasure that is generated within us on beholding certain objects. This, no doubt, is true, but it must not be forgotten that much depends on our competency of receiving impressions. The things that delight one person may excite pain in another, and be indifferent to a third party, which disparities of feeling arise from the state, quality, and capacity of each individual phrenological organization. Further, sometimes certain pleasing impressions which have been enhanced by association may, when recalled in after times, become painful, because the individuals with whom we once enjoyed them have passed away, no longer to share, through sympathy, the feelings generated by their rehearsal. Again, the appreciative enjoyment of particular objects depends upon the condition we may be in at the time of their presentation. For instance, those things or elements which might create gratification when in health will, under disorder or disease, produce uneasiness and even distressing pain.

Thus the light that had so often afforded us gladness and luxury, during sanity, by assisting us to contemplate some beautiful existence, will, in particular maladies, produce a contrary result, as in certain affections of the eye (or rather a portion of brain situated behind the organs of vision); for during ophthalmic inflammation the luminosity that gave pleasure, because it enabled the gazer to appreciate beautiful objects or friends, now calls forth pain and even terrible anguish. So, likewise, in inflammation of the brain, its natural economy becomes perverted, and this viscus which, before the vascular irritation, was so capable of reaping pleasure as it listened to some happy voice or delight-giving melody, now shrinks with terror from the sound. This alteration of function under the invasion of the above-named attack probably results from intense or heightened impressionability of the organization, and thus the undulatory elements, that in health might only cause the nervous fibrillæ of the brain to pulsate gently, may, when pervaded by disorder,

make them tremble irregularly, or with too vehement rapidity, and not at all in harmonious unison with the vibrations emanating from the body that called forth the sensation. This state or disposition of things may be comprehended very readily by regarding the torture (so well depicted in the musician's countenance painted by Hogarth) induced in an individual possessing a large organ of Tune whilst listening to an instrument played upon by a performer, whose taste may extend to anything else save the sense of melody.

(43.) To follow out our subject analytically, it may be necessary to define and point out some of the causes that tend to the development of beauty. It will be likewise needful to seek after and define some of the causes which frequently mar or obstruct so many of Nature's efforts, or at least interrupt the progress of the first intention as regards her productions.

(44.) Situated within a healthy or perfect vegetable seed, or rather enclosed in its fertilized embryo, lies one of Nature's inbred rudimental living existences, constituting a central point of energy, the result of certain previous agencies. Now this cogent *point d'appui* owes its origin to two other nuclei of quickening sway, the one springing from an ovule or germ-cell, the other resulting from a sperm vesicle by the union of the two, and the after-cell multiplication originates the compound ovule that hereafter is to be the parent or source of the future phanerogamous or flowering plant, which, in a measure, is the case with the cryptogamic or blossomless vegetation. An almost like economy ensues as regards the animal kingdom.

It may be presumed, then, that Nature endows or gives to every species of seed a certain primary capacity, which, all things being equal and in accord, will carry out her intent, namely, that of producing a complete offspring, after its kind, of a definite and proportionate form, with its accompanying attributes, which shall become a perfect plant or animal

(45.) If we examine the different leaves of a vegetable, it will be discovered that some are dissimilarly shaped or

developed, compared with the rest. I do not mean as to size, but an innate sense (possessed by certain individuals or connoisseurs of the purposes of Nature) will direct us, in selecting one from a series, which in appearance approaches the nearest to excellency or that form best adapted for correctly displaying the features and contour of the entire or perfected plant on which the leaf grew. The same feelings will dictate the appropriate shape and dimensions of a flower or tree in the aggregate, by comparing many of the same family, the one with the other. These observations equally apply to the animal creation, and there have existed individual organizations so excellent and transcendent which gave the possessor the capacity of grouping or combining the separate beauties belonging to different persons, or things (that is, to interchange the objectionable feature or part of one individual existence for the more perfect portion of another) into one beautiful collectedness or total. Such characters were Phidias and Praxiteles. It was this ability of copying and uniting separate perfect parts, so as to make up a consummate whole, that led us to worship the productions of some of the Greek artificers.

(46.) The agents that excite into action the central rudiment or germ belonging to the seed of plants and the egg of animals lie external to the one and the other. And be it known that, without the influencing sway exhibited by these outlying co-workers of Nature, none of the vivifying results observed to be developed in these focal nests, so to speak, would ever have taken place, for the central point alluded to in section 44 apparently possesses no innate ability to perform any operation by itself, or if it be capable of this economy it lies dormant until aroused into a quickening state by agencies external to it, like the suspended piece of steel that becomes thrown into motion by the presence and approach of the loadstone. In fact, we may correctly state that all the processes taking place throughout the workings of Nature are the resulting efforts of a vast series of actions and reactions. If the capacity of self-development were resident within the seed-germs of plants and the sperm-cells of animals they would be entirely independent of all accessory

agents, and it would follow as a sequence that locality and surrounding influences would be of little import. Further, if this ability of unfoldment was innate or independent of external agents, each germ ought, when liberated from its original source, to grow and fulfil its functions under most temperatures, equally in the water as upon land, buried deep in the soil as when near its surface, whether suspended in the air or resting on the barren rock.

Besides, experience teaches us that all living as well as inanimate existences exercise their economy from being influenced by certain imponderable undulatory elements, as well as gravitating materials, some of which may often be situated at a great distance from the bodies acted upon, though they may be as far away as the planetary system that is associated with the earth and even the star-suns that govern their destined motions. It should be remembered that remoteness or approximation makes no difference in the quantity of action that one body can exert over another. It is the intensity or degree of operation that varies as bodies approach each other. Thus, when a ball is in motion its weight and the earth's attraction for it remain the same, however near or distant it be, or slow or rapid its course.

(47.) It is an operation from without that governs the natural progressive economy of each animal and plant, causing them to appropriate, at the different stages of their existence, the elements which are to develop their varied changes. The first evident effect occasioned by external stimulation in the gemmule or embryo of the plant is germination, which is induced by the inciting action of a certain degree of heat and moisture, which operations are particularly aided by the chemical or actinic rays situated in the atmosphere.

A further external adjuvant is the action of the oxygen of the air upon the starch found in all seed. This operation gives rise to a kind of *eremacausis* or combustion, bringing into operation heat and electricity; this latter element induces a determinate elliptic motion which is observed to be set up in and among the molecules composing the nucleal heart or centre-point of the germ, which compels it to commence and

then exercise its necessitated functions. During this stage the rudimental gemmule, or soft internal bud of the seed, begins to imbibe its first tangible food, which is contained in the now saccherined (sugar-sweetened) cotyledons or seed lobes that embrace it. Be it also noticed that this early pabulum lies external to the embryonic centre-point, but its presence serves as one of the excitants to cause the germ to partake of the aliment which is so necessary for urging onwards its growth, and thus gives it the ability to shoot forth. The further progress of the plant awaits other influences of a different character. Thus, when the slender plumule or embryonic bud is pushed outwards, and begins to open its leaves, it requires light, which, unlike actin, one of the elements of the atmosphere, would have checked germination. The plumule also needs the presence in the soil of certain salts, and sometimes organic animal matter is necessary (as in the Venus Fly-trap tribe) that was not required before, but without which presence the further advancement of the foliage would have been impaired, if not arrested. These latter agents produce greater changes in the appearance of the vegetation that clothes the landscape than is generally supposed. Besides the influences alluded to above, the operation of which comes from without, and that experience has proved are necessary to the early development of the vegetable kingdom, there are others less easily detected, though far more numerous, in fact so multiplied that calculation could not reach them, since all bodies and elements, near or far, throughout the universe influence each other, one acting with more intensity than another, either because it lies more adjacent, or from having greater ability, by association or affinity, to excite into activity the inherent elements and properties which predispose each entity to display its natural gradations. A change even in position, and especially of place, effects a modification in the growing herb. Again, an alteration in the economy of one substance will induce in another, upon which it is exerting its sway, a corresponding deviation of action. Thus we often see the same kind of vegetables in one locality (produced from the same seed) more healthy and

assuming a finer or more beautiful form than they do in another situation, though in the same kind of mould, and the distance between the groups may only be a few feet. These variations occur independently of soil, moisture, air, or light; and the like differences occur in aerial plants, which have been noticed to change in character, by altering their situation, as when placing them over diverse parts of a given piece of land. Again, plants also vary as they grow near a certain rock, or some particular tree, &c., &c. The foregoing facts have likewise been verified by experiments on vegetation cultivated in pots, or tubs, &c.

The presence* of particular salts, &c., in the soil, produces like effects, though not in any way imbibed or absorbed by the vegetation, for in their absence products particularly expected do not ensue or result. There are likewise electrical and magnetic actions continually going on, ever varying in intensity, which continually play their part in and among

**Action by presence* is frequently seen in the laboratory. For instance, a piece of spongy platinum placed near a gaseous mixture of oxygen and hydrogen causes them to unite chemically, to form water. Further, if we place various portions of fulminating compounds in different parts of a room, and explode only one of them by percussion, the other parcels, though untouched or jarred by the stroke, will, through a kind of sympathy, detonate, either simultaneously or after a period; but neither of these divisions would have flashed off if the blow had been applied to any other body save one of the allotments in question. Fermentation is at present little understood. Putrid emanations, when even at a long distance away, give rise to other ferments. By the operation of the principle of action by presence, one substance may so operate upon another as to develop in it certain latent abilities and properties. Thus, a few drops of diluted sulphuric acid boiled with starch set in operation an action which decomposes any quantity of starch, and causes the decomposed elements to re-arrange themselves in a new and different manner under the form of dextrine, and finally of cane sugar. At the expiration of this process the acid may be removed unaltered in quality or quantity. Another acid would not have answered the same purpose. This law of action by presence holds good with regard to the operation of homœopathic remedies. If the infinitesimal atoms of homœopathic medicines are brought into contact with tissues with which they have no relations or affinities, no special effects are observed; but when these molecules are made to bear upon disordered parts with which they are in homœopathic *rappor*t (association) we witness effects as wonderful as those of the magnet in vivifying unlimited numbers of the atoms of unmagnetized steel. There must then be a relation between the diseased part and the remedy. ("Marcy," vol. i., p. 142.)

organic and inorganic bodies. The foregoing facts lead to the peremptory conclusion that the above results take place from the undulatory qualifying influences which are always emanating from surrounding objects. These pulsatory controlling qualities must produce or excite forth changes in the materials upon which they impinge.

(48.) It is now known that nearly every latitude and longitude of ocean holds its special indwellers, whose economy is adapted to their surroundings. The like bearings may be observed to obtain among the land habitants. It has also been experienced that different regions of the earth produce a particular vegetation and fauna (local animals). Thus the indwellers upon the savannahs and pampas of the New, with the habitants belonging to the plains and deserts of the Old World, differ from each other, and these again exhibit a dissimilarity to those of the mountain ranges bounding each district. So also is it with man; for it may be discerned that the dwellers in one locality are more beautiful, and their proportions more equal and in keeping than those of another, though the distance between the two parties may be only a few miles. This difference of character is remarkably apparent in the aspect of the mountaineers of each separate country, who in strength, height, comeliness, and energy far excel those residing in the valleys, as seen among the Georgian, Circassian, and Afghan races, &c.

(49.) Food effects strange alterations in the human form, having an ability not only to excite into action, but even change individual propensities. I have known persons to become irritable and combative if they partook of much animal nutriment, especially when the sustenance was beef. The properly well-fed adult and child display an exterior very different to those whose aliment has been scanty, or not accordant with their occupation, locality, and organization, as witnessed in the gigantic fish-eating Patagonian as contrasted with the squalid Tartar, and particularly the diminutive descendants of those Irish who, during and after the rebellion, lived on common wild herbs, and even grass. These latter individuals, who before the revolution were comely and handsome, are now, especially those found in

Antrim, degenerated even to the alteration of the shape of their limbs, and the advancement forwards—ape-like—of the bones of the face.

Vegetarians in general, who are surrounded by certain congenial circumstances, are mostly healthy, full-grown in stature, and more industrious than flesh-feeding individuals.

(50.) The things and persons with whom we come into relation have a vast deal more dominion over us than we generally dream of in our reasonings. No being can be comely and healthy who is exposed for a lengthened period to circumstances that may render him unhappy. All those individuals, and they were of every rank and denomination, who visited Mr. R. Owen's Institution at Lanark (see his "Universal Revolutions") used to ask him where he obtained so many extraordinarily beautiful children, and his reply was that he did not select, but gathered them indiscriminately; and he pointed out to his interrogators that it was the happy circumstances wherewith he encompassed them which produced the felicitous effects they witnessed, and thus he proved by practice that we do not form ourselves, but are made in the greater part the beings we become by the surroundings to which we have been exposed. The Greeks and Romans were well aware of the above facts; and when the matrons were *enceinte* (pregnant) they exposed them to those incidents that were most congenial to their feelings, or rather surrounded them with those objects that might give rise to a taste for the elegant, graceful, and lovely, well knowing that on such treatment chiefly depended the symmetry, refinement, and disposition of their offspring.

The foregoing facts and experiments point out some of the causes which, acting or operating on a given individual, may produce a beautiful form, and even a benign temperament, but, if treated after another mode, can mar Nature's intended proportions as regards lineament.

(51.) The action by presence of bodies one upon another was known, as regards animals, to the ancients, for we read that Jacob made variegated rods, and placed them before the sheep and goats of Laban, in order to alter their exterior

character. Jockeys attest to similar effects being produced on horses. Many naturalists state that similar phenomena take place with various other animals. The Hyla, or tree-frog, like the Iguana (a species of lizard), changes its hues in accordance with the colours of surroundings objects. The Cephalopoda are incited to vary their tints and to harmonise them with that of the surface on which they may rest, and, like the Chameleon, possess an arrangement of pigment-cells, which enable them to effect an alteration in their hues. Fish always put on the tintured shades of the river's bed upon which they sojourn. Birds in the emblazoned stains of their plumage will often resemble the foliage amid which they exercise their economy; and if removed to a new country they lose their original complexions, and also alter some of their habits, adapting themselves to their novel contingencies. Plants and flowers are also modified in shape and liveried dyes, by being subjected to the influence of certain spectra.

We may proceed still further in this investigation—of action by presence—and could recite facts where the form and even whole limbs have varied in appearance and shape through the influence of external agents. Thus the nævi, or mother's-marks, are very familiar examples. I was once acquainted with the wife of an officer (Lient. Gaffrick) who became much disturbed in her system from observing, when pregnant, a man (John Workman, of Berkeley) who had lost his left hand with part of the fore arm, and from this circumstance the lady in question gave birth to an infant minus this member. Dr. J. Blundel has, or had, in his possession a fœtus (child in the womb) like a toad, the consequent of the mother's fright from this reptile. Dr. B. was also possessed of another preparation of a kitten with a parrot's head. The mother-cat, during her pregnancy, had been bitten by this bird. I could quote hundreds of similar incidents, but the above will suffice for illustration (See "*External Agents and their modifying effects*" in my work, "*New Views of Matter*," p. 378.)

(52.) PERSISTENCY OF THE IMPRESSIONS MADE ON LIVING EXISTENCES.—These stamped or imaged effects are often

observed to be very durable, both as regards vegetables and animals. For instance, with respect to our own species. The offspring of some white women, after their second marriage, have put on some of their characters of the first husband, who was a black, though the after spouse belonged to their own species as regards colour. This sequent very frequently occurs with respect to the brute-tribe. Thus a mare, whose first colt was begotten by a male of the zebra race, will ever after give birth to streaked foals, though the sires of her future progeny belonged to the same equine family as herself. Many of the issue of animals have partaken of the character of those of their own species with whom they have been associated while carrying their young. This fact, as before stated, was particularly noticed in regard to the human race by both Greeks and Romans in their observations on the children of their matrons. Mr. Fraser of Findraick, in Scotland, related to me that he was in possession of a perfect black mare, whose issue was very unlike herself or its sire, for the latter was piebald (black and white), while the colt exactly resembled the chestnut gelding which was her companion in the field. Birds hatched by other than their own species often have some of the tinted plumage of the foster rather than the real parents, and, what is still more striking, become possessed of some of the propensities of the nurse-bird that incubated them.

(53.) During gestation the foetus receives most of its modifying impressions immediately from the parent, or mediately through influences received or imbibed during this period by the mother, which qualifying agents tend to introduce new conditions in the early formation of the embryo, and there stamp impressions on its nervous system which in the future come out in the temperament. After birth the excitants from without become more positive or intense by their direct operation on the impressionable sensorium of the individual in question, modifying not only the frame, but waking into more positive action the all-governing soul.

The size and quality of our phrenological developments depend, as before noticed, very much upon the things and circumstances we have been surrounded by, for these govern-

ing divisions of the brain can be enlarged or diminished, like the muscles of the body, accordingly as they are excited into action or are allowed to lie passive from the non-use of them. These alterations in the individual organs of the sensorium have been proved by experiment, as where a cast has been taken of the head both before and after a certain course of education or training, and further by adopting the same plan of modelling the cranium after the exercise or non-employment of a given propensity. Everyone is aware of the fact that a broken limb shrinks or withers, not from the accident, but from desuetude of the muscles; and, *vice versa*, our extremities enlarge and acquire aptitude by the exercise of them. Further, there are other consequents resulting from the employment or non-exercise of the different intellectual developments we possess. Thus, phrenologists have collected through observation a number of valuable facts demonstrating that accordingly as the different organs of the cerebration are exercised, and consequently enlarged and rendered proficient, so will be the shape and proportions of the body. When we reflect that all the functions of the system are carried on or excited into action under the influence of the nervous system, these results will appear self-evident. Time, in unfolding his cycles, has through external agents generated mighty changes in the series of the animal kingdom, as may be gleaned from the remains of those leviathan and other fossils which we find embedded in the leaves of the earth and preserved in its strata like ancient gems in their setting, provoking both wonder and admiration.

(54.) Having so far endeavoured to trace some of the causes whence result the properties and forms, and consequently the beauties, of living Nature, I will proceed to show how, through her efforts, are developed the effects which produce many of those pleasurable feelings that spring up within us, through the medium of our senses, whilst contemplating her more perfect productions and their resulting economy. It would appear that each animate body, and even its individual parts, when they are healthy and proportionate, have an ability to create in us pleasure, and it can likewise be demonstrated that every inanimate

entity, when in keeping with its surroundings, has a capacity to charm. These attributes can be appreciated and enjoyed by every individual who may be possessed of the necessary developed organization, and an adequate knowledge of the uses and adaptations of the things that may encompass him. Our distaste to or disgust for certain things and their belongings often proceed from a want of able perception or just cognisance of their individual appropriateness and association, which capabilities, when acquired, change our opinions and often our sensations as we regard or are exposed to certain objects. Again, many people are induced to notice particular existences or their properties from reminiscences, since the presented subjects abstractedly or alone may possess no captivation whatever for them. Thus we often perceive an individual attracted towards the instrument upon which some person is performing, because in bygone times—in the grave or gay moments of his past life—some friend or esteemed companion used to play upon it. The musician perhaps is executing an enchanting air of a most recent date, yet its composition or novelty excites no appreciation or pleasure in the approaching listener, who breaks in upon the feelings that are making the player's or minstrel's heart throb with delight, by a request that the performer will play some simple or familiar air, perhaps hackneyed and old, which entreaty, when complied with, wakes into action neither his organs of Ideality nor Melody; but calls up before him a certain scene or occurrence with which he was once connected. Yes; the chord or organ of Memory may be struck, as regards a particular object, and the performance of the solicited strain carries him back to a certain person through whom he first heard—and, hearing, perhaps loved—not the music, but the being who had drawn to it, by association, his attention. Persons thus invited, by circumstances, to notice passing events are often thought to have a liking, or taste, as it is called, for a certain thing, when in reality it is association or common curiosity that has prompted them to offer their observations or pay attention to a given subject. Another class of individuals frequently deceive the general

world as to their capabilities of appreciation by pretending to have a fondness for, or to possess a knowledge of, a given subject, and whose remarks or praises are often very tiresome, and mostly such individuals are so dull or insipid as to be unable to recognise that the proficient or apt observer sees through the thin veil that is assumed to hide their empty pretensions.

This last character is a perfect contrast to those benevolent beings who, often most innocent of all comprehension of the topics in question, yet pleasingly lend their sympathies in order not to disappoint the feelings of the performer and exhibitor of things, or tenderer of new propositions. A familiar instance of association as regards musical performances is witnessed now and then in regard to the Scotchman who has sojourned for some time at a distance from the country where he had lived, when the bagpipe's shrill, droning, discordant, music-murdering tones strike upon his ear, at the sound of which he may be observed to start beyond the ability of self-control, delight apparently bursting from his whole system, but not caused by the sweet harmony, for that you cannot elicit from this semitoned instrument, nor will it be from the composition, for that may be, and generally is, most barbarous. No ; remembrance is roused into action, and his feelings have carried him to his native hills again, amid the occurrences that first excited his youthful heart to the reminiscence of its earliest pulses of pleasure. In the connections or belongings, then, often lie the source of pleasure, and not in the immediate object presented.

Illustrative of the above I quote the following : -

A Highland regiment that was quartered abroad was joined by a detachment of another corps, which possessed a remarkably apt piper. This performer, to please the men, played every evening a favourite Scotch air, "Lochaber nae mair." In a few days so many of the soldiers were affected that a great number of them became ill. From his circumstance the leading officer was obliged to order off the detachment and discard the piper. After a time the men recovered their spirits, and were enabled to resume their duty.

(55) In examining more closely wherein lies the beauty of the varied living existences that invite us to inspect and afterwards admire the beautiful products of Nature, especially those creations in which she has been allowed to fully act up to her pristine purpose, we shall find that she observes but few perceptible governing laws; and it may also be detected during this cause-seeking introspection that surrounding circumstances often, as before observed, make her true, and it may be false, to herself, and hence often spring those traits in her productions which please or offend our perceptive faculties. The mineral ingredients sometimes found among the constituents making up an organized body, though still possessing some of the original attributes they had when found in the plant that pervaded them when forming an ingredient of the soil, have appertaining to them an ability of altering the living system of which they may form a part. This unusual diversity, sometimes recognised in the animal and vegetable kingdoms, is at periods conjectured to be the result of a new law that is producing the variety, whereas it is only a modification effected by the presence of the inorganic body within or near the living creature or herb.

(56.) Of all the outlines presented to our phrenological organs of Form, the most pleasing are those that assume the elliptical, oval, or spiral contour, which profiles may be appropriately designated Nature's intended types of development. It has been fully demonstrated that the elements of electricity and magnetism assume these outlines as they undulate over, round, or through the different bodies with which they may come in contact. It may be further stated that these controlling elements govern mediately or immediately all gravitating materials. In fact, it is the imponderable elements, pervading every medium, that effect each process developed around us, and not ponderable matter, which latter is wholly subservient to these subtile elements, and merely serve as so many fulcra or levers, by and through which Nature's imponderables are enabled to accomplish her purposes, whilst unfolding the processes, and even perhaps the events taking place throughout the universe

As regards living existences, the foregoing subtile principles may be said, by their influence, to shape all the lineaments and likewise govern every economy appertaining to them. Oersted discovered and demonstrated that the galvanic fluid, also the magnetic and electric currents, observe a gyratory or spiral course around the bodies they traverse. There can be little doubt, then, that the ever-flowing magnetism of the earth causes or originates (as it permeates the living structions situated in the soil), the ellipsoid and gyratory motions that take place in the distribution of the circulating fluids that flow through the growing stems and cells of vegetables. It is to this ellipsoidal motive action that the vesicles of plants owe their ovoid form. To these curvilinear and spiral laws of motion, exercised by the imponderables in question, must be ascribed the source of the oval outline that pervades the aspects of living existences which constitute one of the chief features of their beauty. (See "*Elliptic Motion*," in my work on "*Matter*," p. 323.)

ILLUSTRATIONS OF NATURAL ELLIPSOIDAL MOTIVITY.—
(a.) Fluids when advancing on plane or inclined surfaces exhibit a tendency to flow in the half oval or serpentine direction, as witnessed where streamlets carve their channels in the soft mud or yielding sand, and again may be recognised in the windings of a river's course through a country. This serpentine route is traced out from the innate undulatory law that governs the motions of all bodies when freed from the obstructions that may hold in check their natural motive propensity.

(b.) All hurricanes pursue an undulatory, spiral, or corkscrew-like course, and are of an electrical origin. These tempests or whirlstorms are seen to pass in a determined direction, and generally advance along a lengthened curved axis from the equator to the poles. A ship, the *Charles Huddle*, once scudded for five days before the wind, and sailed round the vortex of the storm, keeping the wind always in the quarter opposite to that in which she was scudding. During the earthquake at Japan, December, 1854, the Russian frigate, *Diana*, in half-an-hour was

swung entirely round by the eddies and whirlpools 43 times, twisting her chains up into knots.

(c.) Dr. Franklin relates that he saw a whirlwind which began by taking up dust in the form of a cone or sugar-loaf, with the apex pointing downwards, and soon afterwards grew to the height of 50ft., being 20 or 30 feet in diameter. It advanced in a direction contrary to the wind, and although the rotatory motion of the column was very rapid, its onward progress was slow, so as to allow a man to keep pace with it; after progressing for three-quarters of a mile it entered a wood, where it twisted large trees with surprising energy. These were carried upwards in spiral lines, together with boughs and leaves, which from their height appeared reduced to the size of flies. In the earthquakes of Peru, according to Humboldt, the circling rotatory commotions are the most dangerous. Walls were observed to be twisted, but not thrown down; rows of trees were turned from their previous parallel direction; fields covered with different kinds of plants were displaced in the great earthquake of Riobomba, 1797, and in that of Calabria, in 1783. The phenomena of the inversion or displacement of fields and pieces of land, by which one is made to occupy the place of another, is connected with the translatory motion or penetration of separate terrestrial strata. "When," continues Humboldt, "I made a plan of the ruined town of Riobomba one particular spot was pointed out to me where all the furniture of a house had been found under the ruins of another. In some cases it was necessary to appeal to the Audiencia, or Council of Justice, to decide upon the contentions that arose regarding the proprietorship of objects that had been removed to a distance."

(d.) When liquids are set at liberty, so that they can escape from certain receptacles without obstruction, they assume the spiral shape, as witnessed in the corkscrew column formed by the water liberated through a tube appertaining to a vessel containing a fluid.

Again, liquids, when expanding by the process of solidification, would appear to exert their energy after an elliptical or ovoid form, as perceived on examining the oval

apertures made in soft metals when bursting by freezing their contained water.

(e.) Bodies preserve their shape and likewise become more sonorous after percussion, when oval, than of any other configuration. They also do not expand so unequally on the application of caloric, nor are they so liable to crack or burst on the application of heat. This form ought to be attended to in casting bells and making musical instruments, and then we should have more perfect melodious tones produced, especially when playing on wind instruments.

(f.) The motions of animals, whilst obeying their inbred natural impulses, partake of the crescentic character, as seen with the serpent tribe and in the recreative flight of birds through the air, the sportive gliding of fish along the meandering river, and particularly the attractive postures and elegant carriage of the body displayed by the feline race in their joyous gambols. The same curve is described or developed in part by the so-called instinctive movements of the separate members, as the arms, legs, and wings of locomotive creatures. This bow-like outline whilst walking is scarcely perceptible, from the short portion of the ellipsoidal segment made by the foot, but may be readily discerned when following a man (where the effort must be greatly increased to preserve the equilibrium) with a wooden support, and observing the ovoid segments made with it in the snow as he progresses. The different steps performed in dancing pourtray the same disposition; and the nearer approach to the ovate sweep, the more graceful will be the achievement.

Round bodies in rolling over a plane do not describe circles, but ellipsoidal curves, the axis (unlike a wheel turning on a pivot or fixed spindle) being now removed from the centre to the ground. Thus the nail situated in the tire of the running carriage wheel forms a series of lengthened ovals in the air as it progresses. The inclination of ponderable ærial and fluid matter to undulate and describe serpentine curves is again witnessed in the wind-impelled waves of the lake and ocean, and likewise in the whirls of dust driven by the breeze over a smooth plane,

and may also be observed in the curvilinear outline extending, almost to any distance, along the lax rope when the elevated hand that holds one of its extremities is suddenly depressed. This last undulatory motion is governed, it would appear, by an electrical action, as demonstrated when smacking a whip, and so intense is the energy that portions of the flax-formed cord will fly off at each report. It is the electricity delivered from the terminating string at the end of the thong that gives the pain or shock to the animal when struck. The electric fluid in question can be demonstrated by applying a piece of fine wire, which serves as a good conductor, to the end of the whip. By these means we can elicit sparks at each report the lash produces, as witnessed when the feat is performed in the dark. (*See article "Sound," in my work on "Matter."*)

(g.) When bubbles of phosphorated hydrogen burst forth with a slight report into the air from the fluid in which they were generated, the white circlelets they at first form gradually become oval. These elliptical loops can be imitated. Thus, if we stretch an elastic membrane across the base of a funnel that has been filled with white smoke, on tapping lightly the applied tissue the confined murky air will escape from the apex or pipe of the cone in oval cinctures, although the aperture through which the smoke was ejected be perfectly round, or even square, showing that these rings are elastic, like undulating musical tones, which pulsations, when produced out of tune, are observed to be puckered, as shown in Chaldni's experiments; but if the intonations flow freely for some distance, their corrugated waves, that at first set the teeth on edge, obey, after a time, the common law of bodies in motion, and assume the proper ellipsoidal curve, and if these originally discordant notes are heard at some distance they impinge on the ear, or rather the organ of Melody, as perfect tones. The smoke of the recently extinguished taper, as it floats through the still air, is seen to describe wavy ellipses.

(h.) Animals and vegetables and their individual parts during development and growth progress in a curvilinear direction, and consequently give rise to oval or ellipsoidal

and spiral productions, as recognised in the coilings of tendrils, and also the whirls formed by leaves, &c., likewise in the shape of the organs and cells making up living animal structures; and, again, in the outline described by the shape of seeds, eggs, fruit, blood-globules, and the eyes of locomotive creatures.

This economy would appear to be the result of, and effected by, that spiral or conical law of motion, impressed upon the never-resting imponderable principles of Nature, which, in acting on gravitating matter, seem to exert their energies in a conchoidal or incurved course. Thus galvanism, electricity, magnetism, and sound, when passing along conductors (like the nervo-magnetic fluid from the brain of animals, which traverses their nerve-cords) do not permeate them in a right line, but gyrate around their surfaces, and are applied to the wires, &c., that carry them, after the manner of two corkscrews rotating reverse ways, which have been threaded by a rod, as proved by Oersted and Faraday. It should be remembered that we cannot have a positive stream of these all-effecting imponderable elements pass round or along a circuit without calling into active being a negative reactionary current, the latter undulating or winding around the conductor in one direction, progressing from north to south, and the other convoluting the wire or cord in a contrary course, as if proceeding from south to north (*See "Attraction and Repulsion," also "Action and Re-action," in my essay on "Matter."*)

(i.) If a wire be twisted or coiled after the manner of a corkscrew, so as to form a hollow spiral or helix, it will be found under that form to represent a magnet, one end of the coil being north, the other extremity having a south pole, and, if free to move, it will naturally arrange itself in the magnetic meridian under the influence of the earth's magnetism. The poles of this artificial helix are attracted by the unlike poles of an ordinary magnet. Further, this hollow spiral will be found to impart magnetism to soft iron or steel by induction. Again, two such bodies attract or repel each other by their different poles or extremities, like two separate magnets. Indeed, an ordinary magnet, or elongated loadstone, may be

viewed as a body having a number of helical chains of molecules in a state of permanent atomic polarity.

(57.) The foregoing facts would lead us to assume that the spiral arrangement of the leaves and tendrils of plants is the result of an electro-polar or magnetic action. Now as all substances by induction (which phenomenon ensues with more or less intensity between all bodies, according to their proximity or remoteness) may be rendered polar-magnetic or electro-diamagnetic, so the earth and the various materials on its surface can give this quality to growing plants, thus affording them the capacity of continually transmitting streams of electro-magnetism up and down them; the ascending current being often of one character in the day, from the effects of the clouds, evaporation, light, and thermo-electricity; and another kind by night, from the radiation of heat and consequent refrigeration—in fact, varying with changing circumstances. Thus M. de Saussure observed that, during summer and winter, by night as well as by day, when the atmosphere is free from clouds, the electricity of the air is positive; and Mr. Read (Phil. Trans., 1794) showed that out of 404 observations made in one year, the air was positively electrical in 241 and negative in 156; also that the electricity was insensible in seven experiments only. “In fogs, and at the commencement of falls of snow,” observes Humboldt in his “Cosmos,” “I have seen, through a long series of observations, the previously positive electricity rapidly pass into the negative condition, both on the plains of the colder zones, and in the Paramas (mountainous districts covered with stunted trees) of the Cordilleras, at elevations from 11,000 to 16,000 feet.”

Slate-grey clouds are charged (according to Peltier's experiments at Paris) with negative, and white, red, and orange coloured clouds with positive electricity.

But to resume; it has been recognized in the growth of vegetables that there is a point of energy from which one part of the herb shoots upwards into the electrical air, and another portion proceeds downwards into the magnetic earth. (See “*Vegetable Motion*,” in my essay on “*Matter*.”)

Now as we demonstrate in the laboratory that negative and positive electricity are convertible, the one into the other, may we not conjecture that a like change can be effected, as occasion may require, in the processes of Nature? I apprehend as much, and shall surmise, without, I hope, incurring the risk of being deemed too conjectural, that that portion of the plant where the stem and root join may be like the centre of a changeable magnet, so to speak, serving in this way as a living turning-point where elementary electricity can become negative or positive, as circumstances may need, or serve as a changeable centre around which the more intense electrical undulations can become changed into a less energetic vibratory fluid, which may be equally effective as the former, when acting on living structures. I might here remind the reader that the ever-flowing magnetism of the earth is continually passing up through the roots (the filaments of which are continuous with the descending woody tubes of the trunk) to escape or emanate from the apices of the leaves and their underpile, from which latter locality the great process of vegetable evaporation takes place during summer, but in the winter season the upward flow of the earth's electro-magnetism is discharged from the apices of the twigs (after the manner of frictional electricity when discharged into and out of an electrical machine), and the returning current is received from the air by the same ligneous points, and, descending to that part of the plant where the root joins the stem, it may undergo a change as regards polarity, and then traverse the oppositely electrical or magnetic state of the earth. I might here observe that all plants and their seeds are found, when tested by Rutter's magnetoscope, to be oppositely electrical at their adverse extremities.

It is no doubt owing to the economy of trees and shrubs receiving and discharging electricity and magnetism (and in this way rendering the atmosphere less capable of stimulating the animal energies) that certain persons feel so oppressed on entering a wood, or even when approaching large trees, a result especially recognisable in the summer season, at which period an astonishing amount of evaporation takes place from the stomata (the oval orifices in the covering of plants

and cuticle of air-breathing animals) situated on the under surface of leaves. This process must induce great electrical excitement, causing an upward flow through the vegetable world of the negative moisture of the earth, and a downward current, of course vastly less in quantity, of a descending positive sap, whose contained nutriment is abstracted or elected by the oppositely polar state of the growing tissues of plants. There is no doubt that it is from an electrical action, set up in the buds (displaying one of the economies belonging to Nature's cycles), that causes the upward flow of the earth's moisture in spring-time, after the vegetable winter sleep, which resembles the periodical repose witnessed as regards the plants of tropical climates.

(58.) It has often been observed that certain individuals lose their health and comely looks whilst living in woody districts, and regain them subsequently by dwelling in the open plain, where they can uninterruptedly obtain the exhilarating stimulus of the earth's magnetism, so necessary to their well-being. It may here be remarked that the mountaineer boasts of a heightened stature and robust health, although he may be surrounded by trees; but habit, the magnetic rocks, and his lofty position give him the advantage of each passing breeze, which is continually changing the atmosphere, thus bringing to him a constant supply of fresh air, that increases his digestive and nutritive abilities, likewise affording him a ready source from whence to draw the electro-magnetic elements he may require for his system's welfare.

Further, the moisture he is subjected to has recently descended from the clouds, and thus is often loaded with positive electricity, whilst the vapour of the valley, which frequently arises from stagnant waters, relaxes the fibres of the lowlander, because it has given to the herbage of the soil the greater portion of its invigorating electric stimulus.

(59.) Most plants become greatly stunted in their growth and often perish altogether when transplanted from the open garden or field into the grove; and they likewise cease to thrive, or become sickly in character, when even located near a single large tree, not from the absence of light, but from

being deprived of their full or necessary supply, either in quantity or quality, of the magnetism of the earth or the electricity of the air, most of which have passed up and down the adjacent shrubs or loftier tree-stem. Sir R. Phillips states that an electroscope, if placed in a wood, becomes inactive, but when located in the open ground it then exhibits electrical action. "The conducting trees and their leaves," he observes, "operate so as to interfere with the action of the atmospheric electricity."

I might here note that certain persons who have for some time been daily under the operation, for a few minutes, of galvanic or magnetic processes (for particular maladies) often speak of their effects as acting upon or exhilarating them like wine, and remark, when they leave off the diurnal application of either of these processes, that they experience a sense of depression, especially towards the period or hour at which they have been accustomed to undergo their stimulating operation.

(60.) It has often been remarked by particular individuals that, when they stand on bad conductors of electricity or magnetism, as asphalte or oil-cloth, they experience a rapid diminution of the temperature of their bodies. Again, there are other persons, who, when stationed on the carpet of the room, or apparelled in worsted or silk stockings, suffer from cold feet, which discomfort is removed when located on a wooden or stone flooring, and also when wearing cotton or flaxen hose. No doubt these results sometimes occur owing to certain conditions of their animal economy, but chiefly from being, in a degree, cut off from the earth's magnetism, which, when permeating the system freely, enables them to bring into activity the usual or necessary quantity or intensity of their bodily heat. It should be remembered that woollen clothing only serves to sustain the caloric naturally called into action by the animal economy, and does not in any way tend to produce warmth.—(See article, "*Heat*," in my work on "*Matter*," p. 140.)

Again, alterations in the electrical state of the air, &c., are greatly concerned in the economy of the temperature of animals and the growth of vegetables, which last result may

be witnessed where certain flowers close and others unfold on the approach of a storm. Moreover, in highly electrical states of the atmosphere, young shoots of various plants have been observed to elongate with extraordinary rapidity. Duhamel once saw a young stalk of barley grow six inches, and a vine shoot almost two feet, during three days of very electrical weather.

(61.) From the foregoing facts I am constrained to conclude that it is chiefly through the agency, as before suggested, of the atmospheric electricity and the earth's magnetism, that animals and vegetables are enabled to perform their different functions, and I am also incited to ascribe the gyratory motion, as previously noted, of fluids when passing along or escaping from tubes, and the spiral curve effected during the growth of vegetation, to the same source, which disposition is noticed in some of the tissues of animals, and particularly observable relative to the delicate tendrils of most plants. May it not be presumed that accordingly as these shoots are influenced by negative or positive currents of magnetism or electricity, so must follow their gyratory direction? Or can we ascribe the curvatory extension produced to an innate ability of the plant, which enables it to *elect* the positive undulations of electricity, which revolve in one direction, instead of the negative, which turns or observes an opposite course? Or is it that the plant, by means of its life-principle, can change the gyratory propensity of these currents at the moment of their presentation, as economy may require? In either case, or from whatever cause the disposition may spring, it is universal, and can be demonstrated in most vegetable structures.

(a.) In the moss *Funaria hygrometrica* the setæ or bristles of the stems are quite straight when young, but assume the spiral structure as they increase in age. In these setæ the spire turns in two directions; thus, from the base to about two-thirds up the stem, it goes from right to left; it afterwards becomes quite straight, and then progresses in the opposite direction, from left to right. When the capsules (seed vessels) are ripe, if the upper part of the spiral be touched, especially with moisture, the capsule commences

turning from right to left, but if the lower part only be touched or moistened it turns from left to right.

(b.) In coiling stems it would appear as if a tendency to turn to one side was constantly operating, in conjunction with the upright growth, so that a corkscrew form is produced. The turn is usually in the contrary direction to that in which the sun *appears* to move, as is the case with common bindweed, passion-flower, and dodder, &c., but sometimes it progresses with the sun, or from left to right, as does the hop. Almost all flowering plants exhibit a tendency to a spiral growth in their stems.

(c.) The regular arrangement of leaves on the branches of trees is in a spiral course. Thus, in the smooth-trunked species, as the cherry-tree, the bark is more easily torn off in a winding than in any other direction. In trees having few branches, such as the fir, it is not uncommon to see the same tendency manifested by spiral fissures in the wood, when the bark has been for some time removed. The direction of this kind of twist seems to be as constant in straight stems as those which manifest it by coiling. For instance, the common and the edible chestnut have been observed always to twist in contrary ways.

(d.) The young foliage, as the leaf buds, is perceived to be arranged around a common centre or axis. When the bud lengthens, the insertions of the leaves, which were at first close together, are separated by the lengthening of the stem which bears them, and then they assume a spiral or corkscrew-like arrangement round it.

(e.) The spiral adjustment of the leaves on the stems of plants has in some way been made a matter of mathematical investigation by Brown and Schimper; and it is found that this arrangement is possessed of certain fixed mathematical properties, and this attribute extends to the bracts, sepals, petals, and scales of the fruit, &c.

(f.) The cells of plants are ovoid, and within them we find deposits presenting the form of a more or less regular spiral fibre, winding within the cell from end to end, and this may present itself alike in cells of the ordinary shape, or in fusiform cells (constituting the proper spiral vessels) or

in cells that have coalesced into continuous tubes or ducts. This spiral fibre is very completely generated in some instances when the cell-wall itself has not acquired any greater tenacity than that of mucus, and it is very easily dissolved. Such spiral fibres spring out from the external coats of many seeds when they are moistened. The inherent ability of curvation in plants mostly results in the production of a spire. Mandl demonstrated that all tegmentary appendages of animals tend to the spiral form, as the scales, feathers, hair, &c., and many of the internal organs are subject to the same law. Goëthe, in his essay on the spiral tendency of vegetation, points out that plants and branches with their leaves do, when injured, put on a spiral character to protect themselves.

(g.) The sap of plants is seen to be in a rotatory motion, describing a gyratory course as it ascends and descends on the sides of the cells. Amici states that in the chara plant there is a rotatory motion in the fluid of each cell. It may be described as a revolving movement round the inside of each vesicle, ascending on one side and descending on the other, and, what is remarkable, the ascending current is uniformly on that side of each cell which is most remote from the axis of growth, and consequently the descending current is on the side nearest the axis. These phenomena belong to all plants, only we cannot detect them. The spores (the productive substance of flowerless plants) of the confervæ (river weeds), when they escape from the tubes of the parent, perform rapid movements from place to place in the water after a gyratory manner, until they fix themselves in the earth.

(h.) Kercher, 200 years ago, refers the motions of the sunflower and the closing of convolvuli to diamagnetism, and the directions of the spiral formed by twining plants to the polar magnetism of the earth.

(62.) Animals during growth resemble plants in the formation of their structure. A gyratory motion is recognised in the movements of the embryo, and, later, in the flow of the fluids through the system; and with some of the viscera a circumvoluntary action, accompanied with an undulatory or

serpentine motivity, is readily discerned during life, and often for a long time after death, as seen relative to the vermicular motion of the intestines, &c.

(a.) In the interior of each primitive nerve is a central coiled thread, surrounded by fat or medullary matter, and thus it becomes insulated from the surrounding tissues.

(b.) The first movement of the planorbis (univalve mollusk) is one of rotation upon its axis, but as development proceeds, and the ciliary vibrations are strengthened, the embryo begins to travel in an elliptical curve around the interior of the egg, its two movements (to compare small things with great) resembling those of the planets in the solar system.

(c.) The stomach partially rotates whilst in action; hence in some animals, especially belonging to the bovine race, we find hair balls; and again the owl disgorges pellets, which are formed of the *débris* of the indigestible parts of the animals they have captured for their food.

(d.) The eggs of birds, according to Owen, as they pass down the ova duct, rotate on their axis and take a spiral course as they descend.

(63.) It would appear, almost to a demonstration from some of the foregoing facts, that all vegetation of every kind is traversed, as before suggested, by electro-magnetic currents, which streams, it may be presumed, excite a tendency in plants to assume a spiral growth. That vegetation is pervaded by electrical currents is evidenced from their capability of decomposing bodies. Thus many plants must be in a different electrical condition during the night to what they are in the day, for it is known that at the former period they exhale carbonic acid, whilst by day they throw off oxygen, &c.

(64.) AS REGARDS THE SPIRAL CURRENTS OF ELECTRO-MAGNETISM THAT TRAVERSE PLANTS.—This economy may be demonstrated by drawing on the surface of certain branching trees lines commencing at the point from whence issues the first limb of the trunk, or first leaf of a stem, and continuing upwards, in a curved direction, to the attachment of the next off-shoot, and thus progressing

through the bases of the succeeding boughs or foliage, we shall delineate round the tree or herb a serpentine outline. Now, on tracing downwards from the uppermost limb of these trees a similar curvilinear streak, commencing at the opposite surface of the tree's trunk, we shall, by the adaptation of it to the former ascending line, describe a number of oval segments on the exterior of the tree, thus constituting a series of ovoid ellipses, which gyratory loops the tree may be said to thread, as does the vibrating string of a musical instrument, the undulatory negative and positive waves formed by the matter of sound when in motion and travelling contrary ways creating in their course bellying waves intersected by nodes. (*See diagram p. 20, in my work on "Matter."*)

Now, as each tree and herbaceous stalk is continually traversed up and down by encircling diverse currents of negative and positive electro-magnetism, may not these streams, as they intersect each other at particular points, be capable of establishing certain nodes resembling those created on the sounding string, and may not these become so many centre-points of energy, which, stimulating particular spots situated on the growing tree or stalk, incite forth buds which are afterwards to form limbs, leaves, or flowers, as Nature may direct?

I entertain the idea that an economy like the above may be very possible; at all events, the foregoing hypothesis may serve to draw the attention of physiologists to this, as yet, unexplained natural ordination. (*See "Vegetable Electro-Magnetism," in my work on "Matter," p. 188.*)

But to resume. The curvilinear character so distinguishable in the outline of natural things, creating their chief feature of beauty, has been particularly noticed by many individuals, and among them we may mention Hogarth, who, without knowing the cause, recognised that the delight experienced when contemplating objects sprang from their contour acting on our senses, which he attempted to portray by painting on the pallet his celebrated serpentine line of beauty, represented in his portrait. Lavater (p. 29) describes that he was possessed by a similar feeling to

Hogarth when he stated that he knew nothing which could give more pleasure to an accurate observer than a distinct and perfectly arched eye-brow.

It would appear from the foregoing that the curvilinear law of natural motion, be it slow or vehement, governs every process in Nature ; pervading alike the rotating molecules of heavy solid bodies, as it does the floating vapour-vesicles making up a filmy cloud ; directing the constituents that enter into the formation of the animal after the same manner, as it presides over those distributed throughout the vegetable kingdom ; attending on the development of the pendant dew-drop equally as it does the creation of the leaf and flower bud, from which this water-jewel may hang ; assisting in the construction of the elliptical cells that form the tissues of plants and animals, as it does in giving outline to the various living existences that beautify the face of the earth, or inhabit its waters. And, finally, its laws are known by astronomers to extend into the heavens, directing the course of each starry orb that begems the dome underneath which we are all progressing into eternity.

(65.) ADMIRATION.—This impression springs chiefly from a sense of the Beautiful. We are often arrested by the feelings that objects engender in us, and become fascinated whilst regarding their belongings. Thus colours, when in keeping and of sufficient intensity, excite our admiration, but disappointment takes place when they are incomplete or altered by any cause, as where a flower has passed its zenith and is fading away. Again, the child, as before observed, is more pleased or excited than the adult by beautiful and brilliant tints, from the early development of the organ of Colour, which is now unblunted by use or satiety, and its sensitiveness at this period of life does not change readily from one thing to another, like the more educated brain of maturer years, that lends itself so readily to different influences. For instance, where there occurs a defective or offensive spot in a coloured landscape painting, the magic of its general effect instantly vanishes, because the detected blemish has interrupted the repose or pleasure

imbibed at first from the beauty that the other parts of the picture excited in the organs of the sensorium. The same result ensues among the educated when a harsh voice is heard in a chorus, or a false note from the orchestra. Again, the charm of an actor's intonations forms but a small portion of the pleasure we receive from the representation of a beautiful drama, for if there be a single flaw in his enunciation, so as to offend the ear, it will completely destroy the effect of the most skilful acting in a comedy, and spoil all the sublimity and pathos of the finest tragedy.

(65.) COLOURS have an attribute by themselves of creating pleasure within us, independent of their quality of adornment, for an object may yield gratification on its own account, apart from its hue. It is often the addition of some tint to an existence that leads certain persons to refer the charm to its tinge, because particular hues exert a great sway over their organ of Colour, causing them not to perceive that the tinted body itself or its qualities can afford pleasure. Thus a rose is the same flower in the dark as when exposed to light, and its odour affords gratification apart from its beautiful hue, which we forget whilst inhaling its perfume.

All substances, nay, every element, through their inherent qualities, can excite forth pleasing sensations, but we never positively lend ourselves distinctly but to one at a time, though when many relative properties are presented at any given period to our senses, so rapid is the succession of their effects that they often appear as the result but of one, which result is frequently attributed to the most prominent, or that which our feelings, from education or organisation, is for the greater part in relation with; and in this way those objects that in themselves combine the greatest number of parts and qualities attract the attention; most especially when they are in keeping, or harmonise the one with the other. Were the most beautiful tinted article broken, we should forget its colour, &c., in the disappointment created by contemplating its loss of form. A person may like a thing for its shape and uses, but be disturbed by its colours or the incongruity of their arrangement; alter these, either to suit the object or the contemplator's election of tint, and a fresh charm is given

to it, the addition enhancing the pleasure created in him through his perceptive faculties. Colours, when regarded alone, induce in some individuals great delight, but when applied falsely to things, the effect produced disturbs certain spectators; hence pigments should be well associated with each other, and adapted to the object they were meant to adorn, or the felicity that might be reaped in regarding either separately is destroyed. We mostly like to contemplate a compound object, as a whole, rather than in divided parts. Many things that delight our receptive senses, when connected and well appointed, may have no charm if presented piecemeal, from the absence of that quality which association lends or gives them.

(66.) FORM. — Shape has been considered by most individuals as the chief feature portraying the beauty of things. It is true that in outline lies one of the most eminent attractions belonging to the objects that arrest our attention; but the reason of this frequently is that, in bodies possessing perfect forms, we find certain qualities or associations which will be absent when the shape is immature, or at variance with certain established rules, and especially when contrary to Nature's design or intent.

(a.) Form is only one out of the many adjuvants that administer to and gratify our senses. For instance, the finest proportioned and perfected flower, of the same species, exhales the sweetest or most pleasing scent, and it will be endowed with the richest tints, because it is mature, and in a healthy state. Again, in proportion as the undulations of musical sounds approach the elliptic or oval form, the greater are their sway to awaken our pleasure, when under the influence of their effects. So it is with the human figure when true in its symmetry. This quality betokens purity of body, since sickness or disproportion of any kind mar our ideas of perfection, because it must interfere with the healthy strength which is so necessary to constitute freedom of motion and grace of attitude.

(b.) It is the belongings to and emanations from the finely developed head that are recollected and cherished, and not the outline that describes its contour—that may merely

serve as a remembrancer; but we often attribute to the exterior of the memento the cause of our immediate feelings, and forget that it is chiefly the associations that this form serves to recall. From this head, or rather from its contents, we perhaps received the knowledge that furnished us with the ability of placing ourselves in safety from many ills, and also rendered us independent of the assistance of others. Under the influencing emanations from its many organs it was that we at times drank so deeply of happiness, and acquired that directing dominion which was in turn to create perception and felicity as regards our companions. In fact, the brain with its capabilities is the jewel that attracts and pleases, and not the skull's form, that being only the casket in which the fascinating gems are preserved.

(c.) Burke, in his work on the "Sublime and Beautiful," states that "The form of the antelope, the swan, or the tiger is considered beautiful, because we take a satisfaction in contemplating the movements which these forms are admirably fitted to produce; but the shape of the pig's nose is not considered beautiful, because we fly with disgust from the filthy purposes for which that animal employs it. So also we call the outward form of the arms and neck, and graceful, oval, falling shoulders, &c., of the human figure beautiful, when their shape is suited to their respective uses, but no one finds any beauty in the external appearance of the human stomach or liver." It was unfortunate, as regards Mr. Burke, that he did not perceive that the feeling of disgust he mentions sprang from ignorance, or want of knowledge, relative to usage. The form is one thing, and the employment of the object another. The hand is often engaged in very filthy occupations, but this does not detract from the beauty of its shape or outline. The stomach or liver in its natural or raw state, at Mr. Burke's dinner table, would not be in keeping, but very appropriately situated in the human body or the anatomical theatre. Disgust would in the latter case be changed into admiration, and even wonder, whilst occupied in the pursuit of their natural economy or uses. Had Mr. B. reflected that the slightest alteration in the form, colour, and consequently the functions

of these viscera might become the cause of suffering, or even the death of the being he held dear; and could he by physiological inquiries have acquired the knowledge of a remedy, through whose curative agency he might, when these organs were out of order, restore them to a state of health, he would have been pervaded with delight, instead of being revolted by their appearance in discovering (as could a clairvoyant, who can see these organs when teeming with healthy life, or, on the contrary, suffering from disorder or disease) that when free from maladies they assumed a certain hue, and under a healthy and natural form they achieved salutary results. The distaste in question would have melted away by his discovering that it is only under disease, or when not in a natural condition, that these viscera become disgusting. The apt physiologist is never pervaded with repugnance when examining these visceral organs if they be in their proper places. No; his senses are chiefly occupied in regarding their natural uses and economy. Again, the pig's snout, like the elephant's trunk, would have filled Mr. Burke with wonder and admiration had he known one thousandth part of its structural appliances, and its capable adaptation to the animal's necessitous wants; and further, if cooked and placed on the dinner table, when his organ of Gustativeness was in action, he would, supposing he had an election for such a dainty, have exclaimed "How beautiful!" Our appreciation of the beautiful depends upon organization, and the education the soul has received by means of the phrenological developments belonging to the brain, and also the training these latter organs have gone through; so that an object which may be disgusting under ignorance becomes delightful when contemplated by those who understand and remember its office and suitableness or adaptability. When true to herself there is nothing distasteful in Nature, but the pretence to a knowledge of her true economy is very revolting.

The duck is a more filthy feeder than Mr. Burke's pig, and strikes the ignorant, as they watch this animal partaking of its sustenance out of the gutter, with great aversion; but the physiologist, whilst meditating on the bird's occupation,

looks beyond the ditch and its contents, for he knows that this water-fowl has an apparatus which will reject that which is foreign to its sustenance, and that the food it takes from the drain will pass into the system as clear as a dew-drop, and as untainted as the fruit that may overhang the puddled trench.

(67.) ASTRONOMY.—Of all that can create wonder and fill us with the sublime, nothing can surpass in beauty the grand and mighty all-influencing spheres that roll and re-roll, millions of miles every minute, in endless orbits through a vast universe, whose only boundary is unimaginable space. Who, that can lend himself to the study or rather veneration of these moving worlds of light, is not lost in the poet's dream of unutterable thoughts, and at the time pervaded by an insatiable thirst to know, as his imagination floats him on to their surface, the ideas and sympathies that must possess the superior living beings, with their innate economies, that dwell on the superficies of these ceaseless cycle-describing luminaries? But I must descend again to mother earth, in order to make a few observations on those who have attempted to teach us the laws governing the starry systems that everywhere surround and influence the planet we inhabit.

(68.) MATHEMATICS.—This science, which investigates the consequences that are deducible from any given or admitted relations between magnitudes or numbers, is usually divided into pure and mixed.

(a.) The Hindoos, or those that made use of the Sanscrit language, were the first people that used cycles and epochs, upwards of 40,000 years ago, and were followed by the Chinese, and subsequently the Persians and Egyptians.

The worshippers of Om-Aum or Braham well understood astronomy, and calculated truly the times of revolution and the distances of the planetary and solar systems, and all these without the knowledge or rather of the appliance of our numerals and geometry, or the Logarithms of Steifel, the Differential Calculus of Leibnitz, or the Fluxions of Newton.

(b.) ASTROLOGY.—This science or knowledge of the stars was the parent of astronomy, and had its birth in Hindostan. It is still made use of by very many learned men to foretell

natural events and the destiny of man. There can be little doubt that much which is found in judicial astrology is worthy of notice, or so many wise men—both in ancient and modern times—would not have laboured in this field of inquiry. It is more than probable that in coming time, as we advance in knowledge, all doubts as regards the proficiency of astrology will melt away, and the fate or future of things be made as evidently true to the senses and experience of the yet unborn as are the past and present general occurrences to the now living. The souls of the clairvoyants in ancient times could foretell or prognosticate events and the destiny of individual persons. It has been my experience, and that of a host of others, that the indwelling spirit of the clairvoyants of the present day can effect the same contingencies. I would then suggest that that which is true of clairvoyance may be equally veracious as regards astrology.

(c.) THE HEAVENLY CANOPY.—The apparatus and science of mathematics that help us in our celestial observations and calculations should be forgotten whilst lending our feelings to the economy of the spheres of heaven, as they dazzle our senses and work upon our organ of Wonder. But too frequently most persons have no idea of the sublimity of the starry firmament above and around us.

(d.) The astronomers are often pervaded, like some musical performers, with too much of the appreciation of the mechanical rather than of the things their apparatus enable them to exhibit, because perhaps they can comprehend the one, whilst the systems their instruments help them to display and mathematically examine, can never be positively conceived.

(e.) The star-gazer, as yet, has only employed his implements in reading a very small portion of the supernal universe that surrounds and acts on the earth we inhabit. Of the fixed stars, as they are erroneously called, he knows but little, and, as regards the planetary systems these illimitable orbs govern, he can recognise nothing.

(f.) The star-suns, with the one lighting up our globe, are all revolving around other luminaries, each of which—in

comparison with the one governing our day—as far exceeds it as does the sun, in size and brightness, surpass the glow-worm and its luculent lamp, which adorns the bank that bounds the country lane.

(69.) PAINTING.—The artist who practises depiction, after all that has been said and sung relative to his productions, is at best but an imperfect copyist, which he should not lose sight of when starting back from his easel, after contemplating what he calls the creations of his own brain. The painter must never forget that all his productions are but attempted resemblances, especially as regards Nature's productions. When the limner can give odours and changing tints to the plants he may be delineating, and endow the animals he would portray with living qualities, and make the canvas yield some of the innate existences that appertain to natural productions, then, and not till then, may he with pride exult in his efforts to imitate the beautiful living loveliness that his educated abilities flattered him he could represent.

(70.) SCULPTURE.—On beholding a beautiful chiselled figure, it mostly wakes up in the imagination the qualities of the living object, of which the marble is a mere superficial representative. There is no attractive beauty in the petrous material in question, beyond the properties of pure carbonate of lime. It is not the stone that fills us with admiration, but the lovely being it serves to represent, whose living endowments would seem to pervade the figure which enchants us as we gaze. The contour that bounds the sculptured image calls forth perhaps in the mind a form full of breathing life. This entrancement leads us to imagine that, if the exquisite attitude and feeling the semblance portrays were to change, the resigned posture and expression would be succeeded by others more graceful and attractive. But the cold marble before us contains no heart that can pulsate in unison with our own. There is no blood-stream that can tint the white cheek, or redden the blanched lip. From or through its eyes never will emanate those varied soul expressions that Nature's original could give forth, neither beaming with friendship nor worshipping with love. The

arm receives no sensible impression from the touch ; and that hand which, if living, could tell us so much by its pressure, remains senseless in our grasp. Beauty's self, fresh chiselled from a Phidias' hand, must have existed as a mockery when compared with the ideal being that occupied his brain, and of which the marble was a projected image. Praxiteles, with his followers, received their impressions from without, and caught from the contemplation of the ballerini or dancing girls and the naked slaves, &c., a beauty here and another there, and all these the ability of their intellects combined together in one unbroken whole, and in this way they dazzled our senses by seizing hold of Nature's intent, feeling at the same time that under a perfect form must reside all the other attributes producing superior excellence.

(71.) EACH LINEAMENT OF THE BODY HAS ITS ATTRACTIVE CHARM.—Every feature appertaining to the animal creation is, when healthy and proportionate, beautiful. It then follows that dress of every kind serves but to curtain the loveliness of the associated parts that make up the human form. This fact has often been annotated upon by the intelligent travellers who have had the opportunity of visiting some of the valleys situated in the interior of Abyssinia, where the natives pass their lives in a perfect state of nudity, and where, according to certain tourists, innocence and modesty reign supreme. In civilized Europe, the face, when the head is covered and the hands gloved, is the only portion of the human form that is allowed to engage the appreciative feelings. But be it known that, on examining the naked living figure, it would be found that many an individual, whether man or woman, who has a very indifferent or plain face, may yet possess a beautiful, attractive back, chest, shoulders, or waist (as regards the latter feature, of course, I allude to those who have never worn, for fashion's sake, belts, corsets, or stays, that so distort and even disease the human form), and likewise graceful outlined limbs and well-developed feet, which latter are never met with where these members have been cramped or shackled with boots and shoes. Reflection, after examina-

tion, will teach us that any of those parts of the human frame, at present hidden by drapery, would draw the admiring attention, equally with the face. Of course, I except the expression and language of the eyes; but these qualitative emanations issue from the spirit or mind, and pass by means of the brain, through the organs of vision, anciently designated the windows of the soul, and are not perceived when the eyes are veiled by their lids.

We do not admire the faces of animals, the glance of their intelligent eyes being excepted, more than the other parts of their bodies, and we ridicule the draping or ornamentation of domestic creatures, because, instead of embellishing, we disfigure, and prevent their freedom of movement. The same result ensues with the human race. No kind of apparel or trinkets, such as chains, bracelets, and especially earrings, can adorn the person. As regards the latter decorations, these serve but to attract the attention from, rather than to, the beautiful external auditory organs. Be it remembered that the wearing of ear-appendages originated with the savages of the wilds, and is quite as disfiguring to a person of natural taste as are the lip and nose ornaments of certain untamed barbarians. Decorative personal productions may serve to bedizen the jeweller's shop, but cannot beautify a living form, whether animal or vegetable.

Lady Wortley Montague, after visiting the bagnio or Turkish bathing-house, observes, page 141:—"I was here convinced of the truth of a reflection I have often made: that if it were the fashion to go naked the face would be hardly observed. I perceived that the ladies of the most delicate skins and finest shapes had the greatest share of my admiration, though their faces were sometimes much less beautiful than those of their companions."

(72.) ARCHITECTURE.—The science of building originated, at first, to suit the earlier wants of man, and afterwards to serve for a defence or to gratify ambition, but its most glorious combinations were effected to captivate his venerative feelings. There was originally a period when the human race dwelt in caves and shady forests, while others

fashioned habitable places with mud on the banks of rivers, or constructed sheds of wood in sylvan glades or bosky dells; but, as knowledge increased, they fabricated tents and dwelt on plains in order that they might there feed their flocks. Subsequently man blessed these latter places of abode for the comfort they afforded, and also because they enabled him to indulge his natural propensity for companionship. Now, as time progressed, and his reflective faculties increased in action, he bethought himself that to save repetition of labour, and to render his abode permanent, he would fashion his dwelling of stone, which afforded means of enlargement, both for convenience as well as security. These advantages he pointed out to other individuals, who copied these structures for their own accommodation and protection. When man forsook his earlier places of devotion, situated in mountain caves or amid the forest shades, he gave up the impressive scenes of Nature to worship under the covered productions of Art, substituting, as regards the woods, pillars of stone in imitation of the stems of the trees, and a roof of masonry for the starlit canopy that domed the grove, exchanging the white light of the sun for the pale yellow flame of the lamp, partaking of the fœtid breathings of an enclosed congregation in place of inhaling the refreshing breeze that had passed over the landscape, perfumed by the scents of flowers, instead of the noisome odours of incense.

(73.) No building, however elegant or gorgeous, could possibly ornament any natural scene, except by contrast. The prospect or landscape adorns the house or turretted domain, and not these latter the surrounding locality. A ship bestows no beauty on the sea, though the sailor (through associations and from its affording him the means of voyaging in safety over its world of waters) thinks his vessel ornaments the ocean. Again, changing circumstances and certain emanating qualities enhance the beauty of living Nature; but, however the seasons may alter the landscape, nothing, except the varying light and weather, can modify or change the appearance of a building. Having once scanned its proportions and general semblance, we know

that it will always preserve the same monotonous set features. Spring will never cause it to vary its character, nor summer adorn it with any kind of verdure. We do not become attached to the dwelling as we do to living things, but to its associations. Beneath its roof we first drank in a mother's love, and felt a father's protection. To it, the domicile, we have often returned from the cold, selfish world, therein to reap parental greetings that bring to the senses pleasure, and to the soul's innate feelings felicitous gratification.

In continuation, the uses and beauties of buildings are merely copies of Nature's productions, and were first suggested through contemplating her works. Thus, the roof shelters us from the storm and heat of the sun, like the vaulted cave and the leaf-bearing branch of the tree. The pillars that support this roof do but imitate the stems of the pine, and originated the columns of the portico of a temple, which finally became one of the most splendid features of architectural art. As tree-stems were wider in diameter at the bottom than at their summit, so the carved supporting pillars diminished in calibre as they rose from the base upwards. The capital of a column took its origin through observing the heads of the taller plants; and the Corinthian adornment of the pillar's summit sprung, according to Callimachus, a Greek, from the accidental contemplation of the acanthus-leaf, which surrounded a basket covered with a tile. The pillar-shafts of the Indian and Egyptian temples are many of them crowned or embellished with lotus blossoms, in memory, perhaps, of the sacredness and luxurious shade afforded by one kind of lotus, and the sweet food yielded by another species, but especially to remind them of the beautiful liliaceous flower that rose up out of the water by day and opened its leaves—like a lover his arms—to welcome the god of day, and then at night closed them again, burying itself in the lake, as if in the tears it had shed at his departure. The snow on the branches of trees and the edges of banks suggested the coping stones and the scroll work of an edifice. The Gothic or Saracenic building perceptibly originated from the rude adaptation of the tree boughs appertaining to the forest

chase into a festal arcade, and the bands about its cleft pillars still indicate the green withes that tied them together. The ribs of the roof are beautifully portrayed, resembling the natural avenues of the forest. The Persian united in the slender pillar-shafts and capitals of his architecture the stem and head of the palm. Further, as regards certain buildings, we soon discover where man departs from Nature by the varied *angles* that everywhere meet the eye, to disturb the sense that elects smoothness of outline, thus breaking in upon the pleasure we feel whilst regarding the ellipsoidal curve. The chief feature that would beautify the exterior proportions of a building is entirely neglected by forming them in squares rather than the graceful oval. This mode of procedure sprung into usage in early times, first, from the want of knowing how to turn an arch; secondly, and chiefly, from the facility experienced in effecting their architectural results. Angles and squares are incompatible with freedom of motion and growth, and seldom exist naturally.

The outlines of a cube-form crystal are fashioned of ellipsoidal corpuscles, and consequently what appears to us an edge must tend to the oval, and not an angle. It is well known that every one experiences more pleasure whilst feeling an ovate, rather than a square or angular object, and those that have been accustomed to dwell in an oval room become sometimes uneasy when located in a four-sided apartment, because the former is a copy of Nature's economy, and is readily appreciated by the curved cerebral filaments, of which the phrenological organs are made up, whilst the square chamber is only tolerated from artificial education, custom, or habit. The phrenological organ of Form is constituted of curvilinear fibres, which latter of course can pulsate in perfect unison with the undulations from oval, but not angular constructions.

(74.) When the inhabitants of India, and subsequently those of Egypt, gave up their tents and commenced to ascend out of barbarism, they began to fashion their temples, &c., of stone, after the crude ideas of the then existing circumstances, and, as the square and oblong materials offered the

simplest means for constructing edifices, they adopted their use. The Greeks and Romans, in their earlier existence, copied the angular productions of the Hindoos and Egyptians, and this characteristic was not departed from until the time of the Tarquins, when the arch (borrowed from the Etruscan domes) was first made use of to relieve the heaviness and open state of their temples and palaces, and this obtained up to the period of Augustus, who introduced into Rome marble, and with it slavery. These structures were protected from the seasons only by coverings of clay and straw. To the two features of the dome and arch we owe the dawn of the light and graceful Gothic, or rather Saracenic (for the Goths had no share in it), that arose simultaneously throughout the civilized world. The structural artist now particularly exercised his abilities to imitate in his buildings the beauties of living Nature, as he had before done in his sculptured statues. The blue expanse above called forth the idea of the cupola, and the rainbow that spanned the sky suggested the arch, or, to descend to things more tangible, the bell-shaped blossom incited the construction of the one, and the curving tendril the other. The architect now imitated the flowers of one plant, the leaves of another, and the fruit of a third, to ornament his productions, and he worked up in stone the loveliness that surrounded him. Whoever felt the pleasurable, luxurious dreams, when looking at Greek and Roman buildings, which possess him whilst contemplating the compositions or groupings of the Arabian artificers in Spain? We abandon ourselves, and, as it would seem, please every sense when viewing the Alhambra of Grenada. Its hall of the Abencerrages makes the other parts pale before the wonderful effects of its colours, as seen in its gorgeous stalactite roof, which is decorated with the usual tints of gold, blue, and red. The details of the Moorish or Saracenic embellishments, with their fantastic forms, produce the most seductive charms, for the embroidery of Nature is transposed to these architectural productions. In fact, the variety and profusion with which they (the Saracens) used their ornaments gave their masses the appearance of a congeries of paintings and incrustation of foliage,

and nothing can be more splendid and brilliant than the effects that resulted from their combinations.

In the loveliness of embellishment we find the details beautifully executed, and the forms extremely fascinating. The mode of piercing the domes for light, which they practised by means of star-like openings, is attended with a magical effect. How strange that man should have left the elaborate and sense-delighting Gothic or Moorish architecture of the thirteenth century to return to the heavy Greek, that at best is only adapted to their own sunny isles, domed by a sky whose colour throws "a purple charm" over their structures, which are perfectly unfitted for more sombre climates, and especially inappropriate to the gloomy locality of England. No doubt this revival took place from certain persons having visited Italy, who, being dazzled by its sun-lit mountains, enchanting campagna or country, and its beautiful marbled delineations of the human form, and experiencing that it was the dwelling-place of poesy and song, they became intoxicated with pleasure; and, their perceptive faculties being thus fascinated, they believed that everything appertaining to this happy land possessed a charm of its own, and under these circumstances was introduced a second time into modern Europe this style of building. Through the foregoing inoculation—so to speak—this heavy mode of architecture began to be adopted, and then became fashionable, a circumstance to which so many bend, who forget that there is no fashion in beauty: the proportions and laws that make up and govern this quality can never alter, and where men depart from Nature's structural economy they are sure to mar all their productions. Most persons feel within themselves more pleasure whilst contemplating the so-called Gothic architecture than they do that which preceded its birth, because worked up among its structures are many of those natural forms that gladden the senses and wake up the memory to surrounding living felicities. Though many individuals are pervaded by these convictions, few there are that have the moral courage to avow and hold by them against the sway of prevailing custom; and they are too often driven to forget the pleasures

they have in past times imbibed, whilst bowing to the dictates of certain prescribed rules laid down by particular individuals as laws which, to break through, would be to gain the name of a modern barbarian. There is not one man in twenty thousand—Bulwer says fifty thousand—who has any opinion of his own; each individual among the “motley crowd” serves only—like the rock—to echo back the observations which too often may be termed the whims of others.

Those things which give the greatest pleasure, and are appreciated alone by our natural feelings, or taken up by the free and unprejudiced, are always the nearest to approach perfection, and are consequently the most beautiful. Molière, when he wished to know if his play was true to Nature, read it to his cook, whom he knew was not wedded to common custom or fashion; and when the composition delighted her he felt certain it was correct, and would please the world. Every experienced author knows that the “gods” in the gallery of a theatre damn or elect a new play, and it is through their feelings and expressions that the author learns the success or rejection of his composition.

(75.) *Odours*.—The quality of Beauty belongs, and may be applied, to any pleasing and perfect production of Nature. Thus this appellation may be correctly used in regard to substances which give pleasure to the nervous fibrillæ that appreciate the odour and taste of things.

(a.) It should be remembered as regards odours that what is agreeable or pleasant to one person may be offensive, nay, pernicious, to another. The fibres of the olfactory organ, which takes cognizance of effluvia, may be likened to those appertaining to the cerebral development that estimates melodious tones, and like them pulsate or vibrate in answer to the application of the undulatory waves constituting odoriferous exhalations.

(b.) The pleasure experienced from artificial scents frequently depends upon association, and sometimes education. Thus, an individual may have had one of the fibres or nerve-loops of his organ of Odour (which is situated at the base of the brain) called into action by a particular friend, or

in some locality that has been associated with certain pleasure-giving circumstances, which memory recalls on the application of a given perfume.

(c.) Natural odours may be said to be of two kinds, viz., pleasing or disagreeable to the sense that takes cognizance of them, or they may be detrimental or salubrious as regards the system generally.

(d.) To enjoy the aroma given off from plants, we must be in a state of health, or the fibres of the organ that appreciates odours will vibrate irregularly, or not in unison with the fragrant undulatory stimulus, and thus, instead of producing pleasure, they will create uneasiness and even pain, as is the case with the fibrillæ making up the organ of Melody when acted upon by musical tones under disease, as during inflammation, &c. (*See Essay on "Sound" in my work on "Matter."*)

(e.) Certain fragrances may be pleasing to A, but not to B, because A possesses particular fibres, in the cerebral organ which take cognizance of scents, that can freely vibrate in appreciative union with individual odours, which B fails to distinguish, because these special filaments appertaining to B's brain lie dormant, or are insensible to the applications in question.

(f.) It should be remembered that certain persons, from want of development or by reason of malformation, and sometimes during certain disorders, can neither taste nor smell.

(g.) Odorous exhalations are material, and capable of an undulatory action, like sound, and can pass through certain substances, like the pulsatory magnetic emanations from the loadstone, which are capable of permeating all bodies. That odours, when confined, escape through the walls of particular receptacles is evidenced by the fact that some animals, like clairvoyants, can detect their existence often at a great distance.

(h.) Some of the fibres making up the organ that appreciates aromas are entirely quiescent; but be it known that these dormant filaments are susceptible of education, for the person that was originally incapable of detecting a certain

fragrance, after having his attention drawn to it, can by its frequent presentation or use readily appreciate a particular odour. This fact is also often exemplified whilst educating animals, for the pig and other creatures have been taught to recognise the exhalations escaping from game, &c., like the pointer dog. But it must not be forgotten that habit often renders us insensible to certain emanations, as exemplified in the store-keeper, who is often unconscious of the effluvia pervading his own shop. Socrates observes that "all things lose by too familiar view or use."

(i.) The mucous membrane of the nose, in which terminate the olfactory nerves, is full of or covered with vibratile or oscillating fibrillæ, over which the undulatory odours from bodies pass to the organ that appreciates aromas.

(j.) The Delphinidæ, or that division of the cetacea which includes the dolphins and porpoises, have no olfactory nerves, but the Balænidæ or proper whales do possess nerves of smell, though very small, and the Manatidæ or herbivorous whales possess them of the usual character.—(*See Article "Smell and Taste" in my work on "Matter."*)

APPENDIX.

(1) The pleasure imbibed when beholding the beautiful or perfect depends on truthful excitement. Therefore an efficient organization is necessary to appreciate, and education to give aptitude, out of which grows refinement of taste.

(2.) Beauty of form enables the possessors to mix grace with their movements. As regards the creatures of the wilds, we are gratified by the recognition that a particular configuration is suited to the wants of the animal, and that certain desired effects or motions are produced with ease, and little effort. It is on this principle that we admire the beauty of the human form, every part of which, when in health, is perfectly fitted for its intended purposes, and thus we laud the motions of a horse, a stag, or cat, as being made without any apparent effort or difficulty, and as the result of an ability which accomplishes its end with the least possible expense of exertion. Hence health and perfect freedom from the least decay is necessary to perfect the beauty of living existences.

(3.) All incongruous combinations in animate beings are contrary to beauty. For example, the lovely pink and white complexion, which suits the delicacy and weakness of the female form and character, is less becoming to a man than the dark red and brown which characterize the sunburnt cheeks of a person accustomed to rural labours, to athletic exercises, to field sports, and to a military or naval life.

(4) The middle or intermediate form in the different species of animals is the most beautiful, that is to say, it is that abstract shape at which the painter or sculptor arrives by rejecting all faulty extremes; hence he takes as a type that from which the varieties of individuals diverge in different directions; in a word, the artist elects Nature's primary intent as regards the medium size in living existences.

(5.) QUALITY is a component belonging to Beauty. Thus the woman must be plastic, and this yield-ability must be just blushing apparent; the man should be full of strength and capable of protecting, as he leans towards or over her all-attractive form.

(6.) As it is with the general shape of the human race and their limbs and features, so it is with the particular stages of life. Thus, though the type of youth and age differ exceedingly, there is a common figure in childhood and in age, which is the more perfect, as it is remote from all peculiarities, but we abstractedly admire children for what they are to be, and old men for what they have been, and we ought benevolently to lean towards both.

(7.) Fatigue or satiety destroys the enjoyment of the Beautiful. Brown, in his *Natural Philosophy*, observes "That the writings we admired on first reading them fatigue and disappoint us when we peruse them too often, and the author appears to be almost trite and of little value, even in his most original images. Again, in travelling over a flat country, amid unvaried scenery, how weary we become! Like passing through a long avenue of trees all day, we might as well be blind for the time."

(8.) We must be of a certain age and in health, also in a happy mood and free from weariness, to appreciate the Beautiful; for the loveliest face and form would wake up in us no sympathy, as far as perfection obtains, if we were very tired or indisposed by any kind of malady.

(9.) A beautiful ballet—when perfect in all its parts—is a picture, drawn from life, of the manners, dresses, ceremonies, and customs of all nations. "The Greeks," says Athenæus, "had brought their dance to such perfection in the art of imitating the passions, that the most eminent sculptors studied and designed from the attributes of the public dancers. And to this study they owed," he says, "undoubtedly some of the transcendent beauties of their works."

(10.) VEGETABLE BEAUTY.—Professor Buckland, speaking of the coal-plants found in the mines of Bohemia, says, "The most elaborate imitations of living foliage upon the painted ceilings of Italian palaces bear no comparison with

the beauteous profusion of extinct vegetable forms with which the galleries are overhung. The roof is covered as with a canopy of gorgeous tapestry, enriched with festoons of most graceful foliage flung in wild irregular profusion over every portion of its surface. The effect is heightened by the contrast of the coal-black colour of these vegetables with the light ground-work of the rock to which they are attached. The spectator feels as if transported by enchantment into the forests of another world ; he beholds trees and ferns of a character now unknown presented to his senses, almost in the beauty and vigour of their primeval life, their scaly stems and bending branches, with their delicate foliage, are all spread forth before him, little impaired by the lapse of countless ages, and bearing faithful records of extinct systems of vegetation, which began and terminated in times of which these relics are the infallible historians."

(11.) Beauty of attitude and grace of carriage are intimately connected with the maintenance and equipoise of the body. No attitude can be beautiful in which the idea of rest is not conveyed by that permanence and security which result from a perfectly felt balance. Grace of carriage requires not only a complete freedom of motion, but also firmness of step, arising from a constant bearing of the centre of gravity over the base of support. It includes ease and security. And in both, whether it be motion becoming fixed as attitude, or attitudes presenting themselves in the shifting flow of motion, beauty and grace reveal themselves in self-command and freedom made manifest by self-control. In short, look at the body in any position or attitude relating to the incidental or casual forms arising out of the free and unconstrained movements of man, healthy in frame and unshackled by conventional usages, and the truth will force itself on your conviction. Pass in review the ponderous strength of the Hercules, the agile Mercury, the graceful ease of the Antinous, the reclining Hyssus, all the animated forms of the frieze of the Parthenon, whatever Greek art has signalized or modern genius realised ; witness the sports of children, or go to the wild denizens of the forest, and proof will no longer be needed that grace and beauty are

inherent in the human body, as the fit instrument of human freedom, and the translucent medium, as it were, of man's spiritual being. (*Green's "Vital Dynamics,"* p. 60.)

(12.) BEAUTY OF FORM MOSTLY ACCOMPANIES PERSONS OF GENIUS.—This was exemplified in Augustus Cæsar, Titus Vespasianus, Philip le Bel of France, Edward the Fourth of England, Alcibiades of Athens, Ismael, one of the sophi of Persia; these were all high and great spirits, and the most beautiful men of their times. (*Lord Bacon*). To these may be added Newton, Napier, and James Crichton, &c., &c.

(13.) EFFECTS OF EXTERNAL AGENTS, ESPECIALLY THAT OF FORM.—The structure of the room in which we sleep, sit, or write has much to do with our happiness, especially when the apartment is oval Do we not breathe freer, sleep sweeter, entertain sublimer thoughts, and feel more felicitous, in a room of fine proportions, animated with light, than when within the dungeon walls? The human spirit can by necessity become accustomed to disproportions, but health and harmony demand everything congenial with internal principles. The truth is that Nature acts anatomically upon and moulds the body, by presenting to it its manifold structural beauties and embellishments. The ovoid form of our globe, the anatomical characteristics of the vegetable and animal world, and the symmetrical beauty of the human form are the modes and means by which Nature acts on our fellow beings.

(14.) Lady W. Montague, when describing Fatima, the Turkish empress, remarks that "The surprising harmony of features! that charming result of the whole! that exact proportion of body! the lovely bloom of complexion, unsullied by art! the unutterable enchantment of her smile! But, oh! her eyes, large and black, with all the soft languishment of the blue, every turn of her features discovering some new graces."

(15.) Nothing is beautiful that is misplaced. (*Burke*.)

(16.) Age is not adapted to imbibe, through sympathy, the Beautiful. In fact, many things that excite forth feeling when young cease to do so when old; thus tickling cannot produce mirth when cross, angry, or very aged.

(17.) A man to the female taste is more beautiful than the loveliest woman, because he has certain masculine attributes that excite her appreciative qualities.

(18.) The somnambule and mesmeric patient, when dreaming, develop most fascinating beauties when in motion and repose, never witnessed in any other state of life.

(19.) Beauty and intellect are mostly combined. Thus Ninon de l'Enclos, the most beautiful woman of her age, was full of probity, understanding, and possessed by every freedom of thought; thus beauty of form appertains to perfection of brain and mind. (*Voltaire*, v. 1, p. 11.)

(20.) ELEGANCE, among the French, as with the ancient Romans, is confined to sculpture, painting, eloquence, and still more to poetry; it does not precisely mean the same thing as grace. The word *grace* applies particularly to motion. (*Voltaire* v. 1, p. 423.)

(21.) Taste would be better understood by calling it appreciation; it is an appetite, and may well be designated taste or feeling, since it is by feeling we appreciate everything.

(22.) We must be happy to estimate Beauty. "I am very miserable, and therefore have not time to acquire taste," said a man during conversation. (*Voltaire*, v. 2, p. 523.)

(23.) "With regard to the Grecian profile, relative to the famous descent of the forehead to the nose in one continued right line, can any person, having a sense of truth and Nature, suppose this natural and true? I will never pronounce that any such living profile can be found; or were it possible to find such a person, he must be most blockishly stupid. This countenance is, in fact, merely imaginary, and only betokening the rapid and unimpassioned countenance of a stupid individual.

"The eye is perfect marble, as are the eyebrows and the whole profile. The cavity between the under lip and the chin, with the arching of the chin itself, notwithstanding apparent beauty, are stone, or at least extremely inanimate. Depraved is the taste which can call this contour graceful, and therefore it must be far from majestic. I should never wish anyone to possess a countenance so cold, insipid, stony, unimpassioned, or so perfectly like a Greek statue." (*Lavater*, p. 432.)

(24.) The great portrayers of beauty—as before observed—were mostly extremely handsome and intellectually bright. Thus Leonardo da Vinci was a genius from a boy; he knew all sciences, and was a sculptor, painter, astronomer, and the handsomest man of his day. Raffaello D'Urbino, the son of a poor painter, was pronounced to be the most elegant and comely personage of his time.

(25.) Relative to dress. Swift states that “a fop is a peg whereon to hang a suit of clothes.”

(26.) The costumed man has been justly defined as “an animal ashamed of his own body.”

(27.) What inanities as regards portraits! Can a man paint a soul upon canvas? And yet the artist talks of his expression! (*Bentley.*)

(28.) “BEAUTY, thou art twice blest; thou blessest the gazer and the possessor, often at once the effect and cause of goodness. A sweet disposition, a loving soul, an affectionate nature will speak through the eyes, the lips, the brow, and become the cause of Beauty. On the other hand, they who have the gift that commands love, a key that opens all minds, are ordinarily inclined to look with happy eyes upon the world at large, to be cheerful and serene, to hope and confide. There is more wisdom than common people dream of in our admiration of a fair face.” (*Bulwer's “Alice,” p. 36.*)

(29.) But who can describe or portray beauty? Let any one look at the finest attempts to achieve this impossibility by the old masters, and then let him compare them with the faces he has seen, and may behold every day as he walks the peopled earth.

(30.) All clever and talented men, especially those blest with genius, always proclaimed that they inherited their abilities from having had beautiful or sensitive mothers.

(31.) Had women been educated like men, not so much through book-learning as by being mixed up with transpiring circumstances and occurring events, they would have given birth to a very superior offspring to that now brought forth; for then the mother, during gestation, would have influenced by induction or investiture the foetus (child

in the womb), through her practical experiences and mental excitements; for during the period of gestation or pregnancy she would have mingled with occurring transactions, by means of which, from her aptness in acquiring knowledge, she would have occupied most of the seats of office and emolument. Under these moral contingencies or incidents, we should have had, everywhere amongst civilized nations, glorious peace, for there would then have been no devastating wars, because the gentler sex would, under this self-education, have taught us to rule through love, as practised by the Jews, and not by means of punishment or murderous strife, but by returning "good for evil," and giving a "kiss for a blow," and, thus circumstanced, man would have been happy, and also woman's more respectful, loving, and worshipping companion, from his then greater dependent reliance on her innate or inborn natural superior abilities.

THE END.

E R R A T A.

Page 50, line 8.—For "originates," read "originates."

" " lines 8 and 9.—For "struitions," read "structures."

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